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THE UNIVERSITY OF ALBERTA

Computer Use in Government Operated Visitor Information Centres in Canada: An Exploratory Investigation

by

Barbara Jane Redmond ©

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF ARTS IN RECREATION

DEPARTMENT OF RECREATION AND LEISURE STUDIES

EDMONTON, ALBERTA

SPRING 1992

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The undersign certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled - Computer Use in Government Operated Visitor Information Centres in Canada: An Exploratory Investigation submitted by Barbara Redmond in partial fulfillment of the requirements for the degree of Master of Arts in Recreation.

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Supervisor, Dr. G. Swinnerton

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Dr. T. Burton

Dr. H. Krahn

J Ross

Dr. J.H. Ross

To my parents:

Clare C. Redmond

and

Joseph W. Redmond

Abstract

The development of information technology has affected the tourism industry. The Hickling Report (1988) examined the technological development in Canada's tourism industry. This report failed to look at the adoption of computer technology in visitor information centres (VICs). The intent of this exploratory study is to examine the use of computers in VICs operated by government agencies across Canada. The agencies examined included federal, provincial park agencies and federal, provincial municipal tourism agencies. Both quantitative and qualitative research techniques were used to examine computer use in VICs. A questionnaire was sent to forty eight agencies which operate VICs across Canada, and only twenty eight questionnaires were returned representing a response rate of 69%.

The Adoption of Innovation model described by Rogers (1983), Damanpour (1987, 1988) and Leonard-Barton (1988) was used to provide the conceptual basis for analyzing the data. Respondents were classified as their organizational innovativeness and selected agencies on the adoption of innovation continuum. Three groups were determined: 1) the Innovators which used computers in VICs. 2) The Majority used computers within their agency, and 3) the Laggards which were not using computers. The results indicate that the vast majority of the responding agencies are at various phases of the initiation stage of the adoption continuum.

Hardware and software considerations, funding, access, and advantages and disadvantages of the systems used by responding agencies were examined. Organizational, technological and human factors which accelerate or act as barriers to the adoption of innovation process were identified. Specific developments in computer technology which may affect the use of computers in VICs were described.

ACKNOWLEDGEMENTS

It seems so odd to be finally finished this thesis, but before I forget the stages of innovation and the factors which affect the adoption of innovation (maybe when I'm seventy), I want to thank some folks who were instrumental in the eventual completion of this study.

I would like to thank my two supervisors. Dr. Betty Anderssen, for her enthusiasm and encouragement during the early stage of this research, and Dr. Guy Swinnerton, who read so many versions of this thesis that he should be enroled in some sort of frequent reader program. Appreciation is also extended to the other members of my thesis committee - Dr. Tim Burton, Dr. Harvey Krahn, and Dr. Chip Ross. My gratitude is extended to Dr. A. Hall, Dr. D. Whitson, and Dr. T. Slack who influenced my thinking regarding scholarly research and life in general. Thanks to Barb, Lisa, and Rob for their support and friendship during the first year of graduate school. Also thanks to Evelyn who scheduled at least twenty appointments with Dr. Swinnerton for me.

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I. THE PROBLEM AND ITS SETTING

A. Introduction

The movement from industrial to information based economies presents new challenges to modern society. The tourism industry, as one of the largest industries in the world, has had to adjust to rapid technological changes, especially in terms of information processing. The advances and proliferation of computer technology has had an impact on the strategic, managerial, and operational decisions made by tourism managers (Ritchie, 1987). However, the Canadian tourism industry lags behind other industries and countries regarding the adoption of computer technology (Hickling, 1988). The Hickling Report (1988) commissioned by Tourism Canada examined technological development in Canada's tourism industry. In that study, the researchers divided the tourism industry into sub-sectors and then examined the adoption and use of computers by each of these sub-sectors. Although the study examined public and industry organizations, which include visitor and convention bureaus, government departments and industry associations, it failed to look specifically at the adoption of computer technology in visitor information centres (VICs). The intention of this study is to go some way to rectifying this omission

B. Statement of the Problem and Research Objectives

i) The Problem

Little if anything has been published which examines the use of computers in VICs in Canada. Basic descriptive information is needed regarding the use of computers in VICs. The purpose of this study is to determine the extent to which computers are used in VICs operated by government agencies across Canada. This study is both exploratory and descriptive in nature. Although insights are made to explain the findings, they are intended to provide the bases for further research in this area. In order to investigate this problem, contributory issues must be considered. These are stated in terms of subproblems:

ii) Research Objectives/Subproblems

First Subproblem. To determine the hardware and software applications employed for general use by agencies which operate VICs.

Second Subproblem. To describe the computer systems used in VICs. This description will include hardware and software considerations, funding, access, and advantages and disadvantages of the system.

Third Subproblem. To classify the agencies as to their innovativeness regarding the use of computer technology in VICs.

Fourth Subproblem. To place selected agencies on the adoption of innovation continuum.

Fifth Subproblem. To determine the factors which affect the adoption of innovation process.

Sixth Subproblem. To identify future trends in computer use in VICs.

C. Delimitations and Limitations

i) Delimitations

1) Visitor information centres are operated by government, private and voluntary organizations. In Canada, government agencies have traditionally been involved in this tourism endeavour. However, there is evidence that other sectors are assuming this role. The government agencies which operate VICs are the focus of this research. The reason for this decision is based on three research issues. First, although comparisons may be made between public and privately operated VICs, it was decided to restrict consideration to government funded VICs for the purposes of obtaining a homogeneous sample. Furthermore, similar organizational and contextual factors, including organizational structure, size, and funding concerns, affect public visitor information centres which allows comparisons to be made among the agencies which operate these centres. Finally, the survey used in this study was supported in part by Alberta Tourism. Colin Sparrow-Clarke, Director of Systems and Computing Services, at Alberta Tourism expressed interest in the employment of computers in VICs operated by government agencies across Canada. Due to this support, this study focuses on government

organizations which operate VICs across Canada. Private agencies and individual VICs run by government agencies were therefore excluded from this survey.

2) The content of this survey followed the requirements established by Alberta Tourism. As a result, the survey was adapted to meet the objective of Alberta Tourism. Restrictions were placed on the questions to be included and excluded by this agency. The potential for including additional questions was declined in order to limit the size of the questionnaire.

3) Time and cost were important factors to consider in the undertaking of this project. Consequently, individual VICs were not contacted. Although private organizations do operate individual information centres, there is no private organization which operates a network of VICs in Canada. Private VICs were, therefore excluded from this survey.

ii) Limitations

1) The intent of this study was to examine the use of computer in VICs across Canada. Unfortunately, agencies representing key jurisdictions, such as the Ontario Ministry of Tourism and Recreation, did not respond to the survey. As a result, generalizations concerning the use of computers in VICs nationally is not appropriate on the bases of the data collected.

2) The information gathered from the pre-test questionnaire suggested that agencies were using computers in VICs to a greater degree than was found from the data collected by the final questionnaire. As a result, this study examines the early stage of development and growth of computer use in VICs.

D. Methodology

In this study computer technology is considered an innovation. Consequently, the theoretical foundation of this research relies on the body of work referred to as the adoption of innovation literature. The work of Everett Rogers (1983), a pioneer in the innovation studies field, has been used extensively in this project. The concepts pertaining to organizational innovation, that is the process by which new devices, techniques, methods or concepts are introduced into organization, have also been used. The work of Kimberly and Evanisko (1981), Damanpour (1987, 1988), and Leonard-Barton (1988) provide the framework to investigate government agencies implementing computers in VIC.

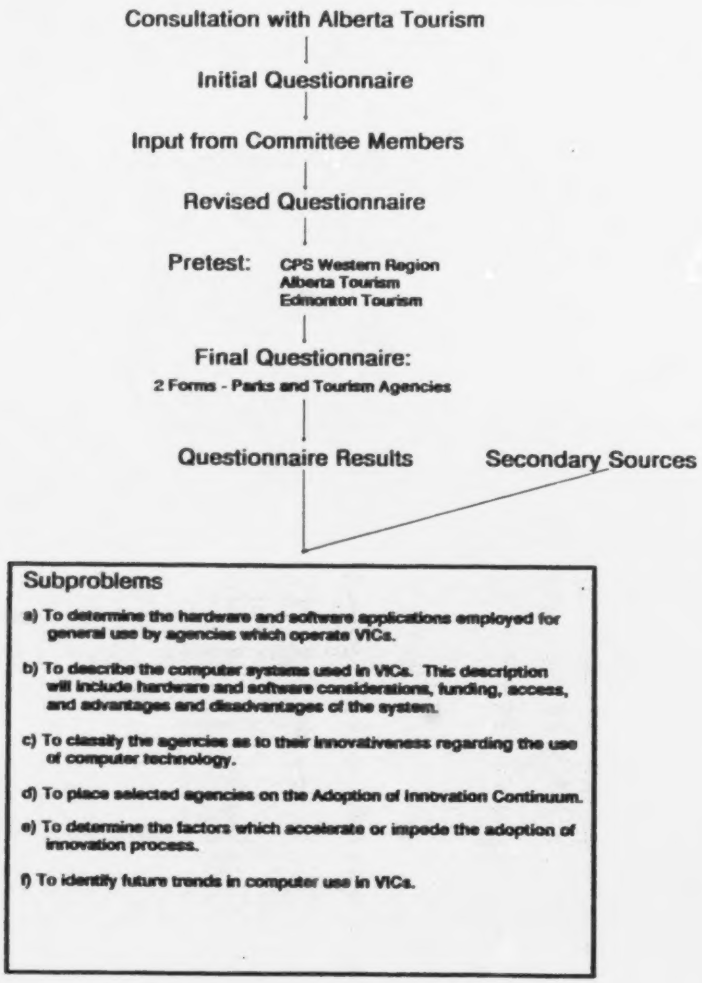
Public, private and voluntary agencies operate VICs. Public tourism and parks agencies commonly administer VICs. Therefore, to accurately generate a profile of the use of computers in these centres it was necessary to survey both parks and tourism agencies. Furthermore, federal, provincial and municipal levels of government operate these parks and tourism information centres. Agencies of the Canadian Parks Service, Tourism Canada, provincial and territorial parks and tourism organizations and selected municipal tourism agencies responded to the questionnaire used in this study.

Forty eight national, provincial, territorial and selected municipal tourism and parks agencies were sent a questionnaire. Twenty eight surveys were returned and of these twenty two surveys were usable. Additional information was gathered using annual reports and newspaper and magazine articles. CoStat and dBASE STATS were used to perform statistical analysis. In order to gather material pertaining to the organizational structure and contextual issues facing the responding agencies, secondary sources were used. Newspaper articles, magazine articles and annual reports were used to generate a profile of these agencies. The availability of annual reports proved to be problematic. The most current annual report from the issuing department was sought. Figure 1.1 illustrates the steps involved in the design and implementation of this study.

E. Significance of Problem

The significance of investigating the use of computers in VICs lies in the relationship between hosts and guests, and information transfer. Host communities provide visitor services to their visitors as these activities are what make the visitor feel welcome and well served. Hosting includes providing information for visitors regarding locations to visit, how to get there, what to see, and what to do to enjoy their visit (Mill, 1990). Visitor information centre are

Figure 1.1 Steps Involved in Thesis Project


Consultation with Alberta Tourism
Initial Questionnaire
Input from Committee Members
Revised Questionnaire
Pretest:
CPS Western Region
Alberta Tourism
Edmonton Tourism
Final Questionnaire:
2 Forms - Parks and Tourism Agencies
Questionnaire Results
Secondary Sources

Subproblems

a) To determine the hardware and software applications employed for general use by agencies which operate VICs.

b) To describe the computer systems used in VICs. This description will include hardware and software considerations, funding, access, and advantages and disadvantages of the system.

c) To classify the agencies as to their innovativeness regarding the use of computer technology.

d) To place selected agencies on the Adoption of Innovation Continuum.

e) To determine the factors which accelerate or impede the adoption of innovation process.

f) To identify future trends in computer use in VICs.

commonly the site of initial contact between the visitor and the host community or park region. The first impression a visitor forms of a community may be created through the VICs. Agencies which operate these centres hope to promote positive impressions of an area in order to influence trip planning decisions and encourage visitors to spend more time and money at a specific destination.

Visitors are frequently unaware of the variety of attractions a community has to offer. Consequently, VICs must provide complete, current, and accurate information about the community. The compilation of this information represents a major commitment on the part of the operating agency. Important decisions regarding organization and presentation of this visitor information are made by these agencies. Computer technology permits a new flexibility and speed in the arrangement and retrieval of information. Information categories enable the user to quickly retrieve information. Updating of information can be done quickly so that all information centres within a jurisdiction can receive new information immediately. Furthermore, relatively recent developments in CD ROM technology have been used to produce multimedia interpretive programs.

Tourism is a twenty one billion industry in Canada, which represents four percent of Canada's gross national product (Canada Yearbook, 1990). The tourism product is an amalgam of services including airplane seats, hotel rooms, restaurant meals, and information services. Lack of service in any one of these areas can have a negative impact on the entire vacation experience for the visitor and have an adverse affect on the local tourism industry and economy.

In the Tourism Canada publication Tourism Tomorrow: Towards a Canadian Tourism Strategy (Minister of State, Tourism, n.d., p. 3), Tom McMillan discussed the importance of striving for excellence in the tourism industry to ensure Canada's competitive position in world.

> The competition is keen now and it will become fierce in the years ahead. If Canada is to play in the big leagues, it will have to be equipped to meet the competition head on (Minister of State, Tourism, n.d).

The use of technology in this industry is essential to compete both at a domestic and international level. The development of information data bases and the interconnection of these data bases is essential to meet the demands of the increasingly sophisticated traveller.

F. Summary

The intention of this study is to explore the use of computers in visitor information centres (VICs) operated by tourism and parks agencies. Six subproblems will be examined to this end. To investigate the subproblems associated with this study, a clear understanding of the literature and methodology used is required. Chapter two will examine the literature used to form the basis of this study. The methodology used to undertake this research project is presented in chapter three. A discussion of the results related to organizational innovativeness and the adoption of innovation continuum is found in chapter four. Chapter five examines the factors found in this study which influence organizational innovativeness and the adoption of innovation. Chapter six outlines some trends facing computer technology and tourism in the future. The final chapter, chapter seven, provides a discussion of the implications of this study.

II. REVIEW OF RELEVANT LITERATURE

The following review examines the relevant theoretical literature related to the sub-problems outlined in Chapter one. This review consists of three major sections. First, it examines the relationship between recreation and tourism, second it looks at tourism and computer technology, and finally it outlines elements associated with innovation used in this study.

A. Background Information

i) Recreation and Tourism Interaction

The relationship between tourism and recreation has received recent attention from researchers in both fields as noted by the following quotation:

> the leisure and recreation literature makes scant reference to tourism, despite the fact that many of the elements found in and influencing leisure and recreation apply to tourism Butler (1989, p.567).

This overlap between leisure/recreation and tourism was acknowledged by Mill (1990) and Smith and Godbey (1991). Mieczkowski (1981) describes tourism as an aspect of recreation, which in turn is a component of leisure. The interaction between recreation and tourism has also been examined by Clare Gunn. Gunn (1990, p. 1) states that there is a "new recreation-tourism alliance". He argues that the two fields will continue to retain their separate identities and purposes, but there are areas of mutual interest and concern. For example, issues of design and planning must be considered in the development of recreation, parks and tourism. Gunn (1990) sees an interdependency among these fields in areas such as market analysis, promotion, environmental concerns and information technology. Tourism research, as is the case with recreation and leisure studies is interdisciplinary in nature (Jackson and Burton, 1989). Biology, anthropology, business, economics, geography, political science, psychology, and sociology contribute to the study of tourism. Each of these fields use very different methodologies and concepts to examine tourism phenomena.

The words 'leisure' and 'tourism' are both plagued with definitional difficulties. In Understanding Leisure and Recreation: Mapping the Past, Charting the Future, Burdge (1989) and Rojek (1989) discuss the concepts and conceptions associated with recreation and leisure. Burdge (1989) argues that the field of leisure and recreation is interdisciplinary in nature. The interdisciplinary nature of leisure and recreation was examined by Jackson and Burton (1989). Interdisciplinary implies " the transfer of methods and approaches across disciplines" (Jackson and Burton, 1989, p.20.). Information technology is one way of transferring methods and approaches across disciplines.

Recreation, parks and leisure services use information technology for a variety of purposes. Computers have been used to improve the information processing capabilities of recreation and leisure services provided by public, private and voluntary agencies. Computerization of leisure services grew substantially in the 1980s. In 1979, less than ten percent of the agencies surveyed by Parks and Recreation reported using microcomputers (Annon., 1980). Recreation managers agree that data processing systems can increase the productivity and effectiveness of staff (Farrel, 1988), but computer technology in recreation organizations is primarily used by clerical staff. Table 2.1 illustrates the areas that have used computer technology in recreation and parks.

In the case of tourism, a variety of definitions have been used to describe this phenomenon. International organizations have attempted to universalize the term tourism. For the purpose of this study, the definition used by Mathieson and Wall (1987) is considered to be appropriate:

> Tourism is the temporary movement of people to destinations outside their normal places of work and residence, the activities undertaken during their stay in these destinations and the facilities created to cater to their needs.

One way of examining tourism is using a systems approach such as that described by Mill and Morrison (1985). The tourism industry consists of a number interrelated parts, such that changes in one part of the system affects the function of the other parts. The components of the tourism industry as described by Mill and Morrison (1985) are market, travel, marketing, and destination. Mill (1990), who represented a management approach to tourism, focuses on four dimensions of tourism - attraction, facilities, transportation and

Table 2.1 Computers in Recreation and Leisure

ADMINISTRATION	
Farrel et. al (1988)	A description of the process involved in assessing computer needs of a recreation department.
MacFarlane (1988)	A performance evaluation of a computer system in a recreation department.
Stuyt (1988)	The results of a survey regarding the use of computers in a parks and recreation department.
Kelly and Zuckerman (1987)	This article outlines the possible applications of electronic mail in recreation.
ENTERTAINMENT	
Ng and June (1985)	This article examines the characteristics of the arcade video game player.
INTERPRETATION	
MacDonald and Alsford (1989)	A discussion of the information technologies used at the Canadian Museum of Civilization.
Scott and Matson (1989)	A description of the video-disc technology used at the University of British Columbia Museum.
Hilke et. al. (1988)	An evaluation of an inter-active computer program used in a museum.

Table 2.1 (Continued) Computers in Recreation and Leisure

LEISURE COUNSELLING	
Olsson et al. (1987)	An evaluation of an automated leisure assessment system.
Haywood and Toole (1986)	A description of a program used for leisure counselling.
Hayward and Fairey (1984)	A case study examining the use of an interactive computer system in the promotion of leisure opportunity awareness.
PLANNING	
Smiley and Buchanan (1988)	A description of the application of computer technology to landscape management.
Levinsohn et al. (1987)	Micro-computers based GIS is used to assess recreation suitability of crown land
Kaczka and Schleusner (1980)	An attempt to model and analyze the effects of changes in ferry schedules in Nantucket Island
Kamp et al. (1980)	A discussion of the potential value of an intergrated MIS for municipal parks operations.
SPECIAL POPULATIONS	
Dattilo (1986)	Examines the possible uses of computer technology in therapeutic recreation.
Lombardo and Kunstler (1985)	Discusses the implementation of a computer assisted art/leisure program.

hospitality. From a marketing perspective, Middletown (1988) subdivided the industry into the following: accommodation, attractions, transport, travel organizers, and destination organizations. Tourism Canada divided the Canadian Tourism industry into seven sub-sectors; transportation, hospitality, food and beverage, events and attractions, distribution, public and industry and government travel control. Another method of subdividing the tourism industry was devised by the Pacific Rim Institute of Tourism (1990); accommodations, hospitality, adventure tourism and recreation, transportation, travel trade, events and conferences, attractions and tourism services.

Regardless of the ways of subdividing the tourism industry into its constituent parts, tourism must adapt to the challenges of the information society. It is now expected that each new generation of technology will replace the previous generation in five years or less (Hickling, 1988). Tourism managers will need to be aware of new developments in technology and how these developments can be applied to the diverse field of tourism to remain competitive at both a domestic and international level.

ii) Tourism and Computer Technology

The tourism industry has used computer technology for a variety of purposes. Tourism is an information-intensive activity. In few other areas of activity is the generation, gathering, processing, application, and communication of information as important for day-to-day operations as they are for the tourist industry (Poon, 1988). Although the tourism industry has not adopted computer technology as quickly as other industries (Hickling, 1988), the benefits associated with the use of computers have been recognized. As a result, computer technology is gradually being introduced to virtually all sectors of the tourism industry.

Ritchie's (1987) three levels of management activity, operational, managerial and strategical may be used to demonstrate the wide use of computer technology in the field of tourism. Table 2.2 illustrates the use of computers by this industry. Operational activities are those tasks required to achieve the variety of objectives defined at the management level. Computers have been used to fulfil operational activities such as accommodation reservations and travel arrangements, lodging operations and management, hotel security, room allocation, food services and accounting.

Managerial activities involve the administrative decisions managers must make in order to fulfil the overall goals and objectives determined at the strategic level. Managerial concerns may entail the implementation of a new

Table 2.2
Computer Technology as Applied
to the Levels of
Tourism Management Activities
(Selected Readings)

OPERATIONAL	
Itinerary Planning	Hogenauer et. al. (1986)
Accommodation Reservations	Var (1986)
Travel Reservations	Feldman (1987)
Travel Counselling	Hruschka and Mananec (1990)
Energy Management	Kirk (1987)
Room Allocations	Sheldon (1983)
Food Services Staff Schedules Convention Bookings	Poon (1988)
MANAGERIAL	
Market Segmentation	Shih (1986)
Product Promotion	Henshall and Roberts (1985)
Expert Systems	Clinton (1988)
Evaluation	Gamble (1988)
STRATEGIC	
Research Database	Example: Tourism Reference and Documentation Centre, Tourism Canada.
Planning (GIS and Tourism)	Li (1987)

electronic accounting system or marketing strategy of a particular resort or group of resorts. For example, microcomputers have been used to generate mailing lists of previous visitors in order to promote repeat business (Willis, 1984). The decision to use information systems in order to educate the public regarding tourism choices is a further example of managerial activities (Var, 1986). Hruschka and

Mazanec (1990) have discussed how computers can assist travel counsellors in providing better services for potential tourists.

Strategic activities involve long-term policies which will influence the character of the organization or segments of the industry. Strategic activities make use of on-line databases to determine social, economic, political and environmental trends that influence the tourism industry. The Tourism Reference and Documentation Centre (TRDC) in Ottawa maintains the most comprehensive collection of tourism-related information in Canada. One purpose of this centre is to promote tourist research by conducting database searches for research documents to assist in information collection.

In order to carry out strategical activities, tourism planners and managers need tools to help them monitor demand, forecast trends, plan strategies and facilitate effective decision planning. The National Task Force on Tourism Data (NRFTD) examined the activities and activities in the tourism industry in order to identify where GIS are most applicable (Li, 1987). The resulting report identified the step to be taken to provide GIS technology for tourism professionals.

The possible applications of computer technology to recreation and tourism is limited only by technological development and creativity. This discussion has only presented a preliminary overview of the current developments. One area of the tourism industry that is attempting to use computer technology is VICs. The following section examines the use of computers in VICs.

iii) Computers in Visitor Information Centres

Initially, it is useful to examine the use of computers by the agencies which operate VICs. Sheldon (1987) surveyed 56 state and provincial tourism offices in the United States and Canada to determine the use of computer technology. Eighty-four percent of the respondents were using in-house computers. Microcomputers were found to be the most popular. The most common application was word processing, followed by spreadsheet (Lotus 1-2-3), and database (dBase III) packages. Research activities performed by the state or provincial tourism offices had only recently been computerized. Visitor characteristics and visitor expenditures were commonly computerized. The questionnaire also asked the respondents for a 'wish list' of computer application. Most frequently mentioned were tourism functions such as a visitor information centre network, on-line customized travel information, and information processing at highway visitor centres. Sheldon's research has been used as the foundation for this study which examines the use of computers in VICs across Canada.

Visitor information centres have been the focus of research in the past. Travel and tourism data are commonly collected in these centres, therefore travel and tourism agencies are interested in identifying the users of these centres. Howard and Gitelson (1989) found no significant differences between the demographic and trip behaviour profiles of users and non-users of VICs. These results support the notion that visitor centres provide reliable data regarding visitor activity. Mahu (1977) and Gitelson and Perdue (1987) have examined the role of these centres in the dissemination of travel related information. Critics of VICs frequently claim that these centres serve as nothing more than free restrooms. Although visitors often use the restroom facilities, typically they also request road maps, route, attraction, accommodation information, and information for future trips (Gitelson and Perdue, 1987).

Ironically, past research has not clearly defined visitor information centres.

> For the purposes of this research project visitor information centres are places visitors/travellers physically enter to obtain tourism or travel information while on route, or at their destination. This excludes pre-holiday planning or telephone communication.

Agencies which operate VICs have only recently introduced computers into these centres. Hultsman (1989) suggests that the primary reason for using microcomputers is to make information easily accessible to users so that more time can be spent participating in activities than in gathering information about them. Computers may entice people to acquire information which they would otherwise be reluctant to obtain though conventional face-to-face inquiries. Other possible reasons for the use of computers in visitor centres are to reduce time and boredom waiting in line (Hultsman, 1989), store information related to visitor activity interests, and broaden individual or group recreational interests (Hultsman, 1988).

In terms of research, the use of microcomputers as a means of providing better service to information centre visitors has been examined by Hultsman (1988, 1989) and Gartner and Verbyla (1986). Hultsman (1988) examined the use of touch-sensitive computers for the dissemination of activity information at a national park visitor centre. She found that a touch-sensitive computer can reduce orientation problems by getting requested information to the user while freeing some park interpreters to perform other tasks within visitor centres.

Gartner and Verbyla (1986) report the case of the Golden Spike Visitor Information Centre in Utah. Microcomputers were used to provide visitors tourism/recreation information at visitor information centres. The intent of the programme was to reduce the costs associated with brochure printing and the amount of time personnel were spending answering visitor questions. The programme was discontinued after only two months due to the perceived cost of the project compared to others forms of providing information to visitors.

The usefulness of computers in VICs is a concern for both researchers and practitioners. The debate between Gartner and Verbyla (1988) and Hultsman (1989) focused on issues related to visitor use and funding concerns. Gartner and Verbyla (1988) expressed concerns related to the level of user friendliness of the system. Hultsman suggests it is essential for designers of these systems to consider the graphic presentation of the information on screen. The introductory screen should be designed to attract the potential user not repel the visitor. The wording of information must be carefully chosen so that it is understood by people of a variety of ages and reading levels. As to the concerns expressed by Gartner and Verbyla (1988) related to funding, Hultsman counters by suggesting that funding concerns have not been adequately examined as long term cost/benefit studies have not be conducted on the use of computers in VICs. Indirect cost saving which allow visitor counsellors to devote part of their time to other visitor services must be examined when evaluating the financial utility of microcomputer use. The Hultsman/Gartner and Verbyla debate demonstrates the importance of evaluating the factors involved in the implementation of computers in VICs.

In the literature computers are not seen as a means of reducing staff (Hultsman, 1989, 1988, Gartner and Verbyla, 1986), but rather for augmenting the existing services provided at visitor centres. By reducing the burden of visitor information counsellors, these counsellors may have the opportunity to develop interpretive programs for the visitors (Hultsman, 1988).

B. Innovation Literature

Although aspects of this study will be compared with Sheldon's work, the innovation literature is the theoretical perspective used in this study. Other research perspectives could have been used for this study, including organization behaviour and culture, and the geographic diffusion of innovation. Innovation research, specifically the adoption of innovation literature, provides an unique opportunity to examine the use of computers in VICs. Furthermore, this is the first time adoption of innovation literature has been used to examine the use of computers in recreation and parks. Prior to exploring this literature base, some introductory comments are in order.

Innovation is the adoption of an idea or behaviour - whether a product, device, system, process policy program or service - that is new to the adopting organization (Damanpour, 1988). Computer technology falls within the parameters of this definition.

Beyond defining the term 'innovation' it is of interest to note the orientation of this field of inquiry. Some researchers (Kimberly, 1981; Van De Ven, 1986) suggest that a positive bias pervades the study of innovation. New ideas which are useful, profitable, constructive, or solve a problem are considered to be an innovation, whereas new ideas that are not perceived as useful are usually called mistakes (Van De

Ven, 1986). This pro-innovation stance has directed the research in this area theoretically and practically. The development of computer technology and its application to business concerns has escalated research endeavors in this field. As a consequence, the innovation field is very broad. To apply the concepts developed in this field to the use of computers in VICs, it is appropriate to confine the discussion to issues concerning the innovation process, and factors that influence the adoption of innovation.

The innovation literature may be arranged into two distinct categories: a) studies of the diffusion of innovation and b) studies of the adoption of innovations. Diffusion researchers are interested in finding out how innovations are diffused among members of a social system, why some innovations are diffused more rapidly than others, and what facilitates or impedes an innovation's rate of adoption (Damanpour, 1988). This type of research is commonly used to develop and market innovations. Adoption of innovation researchers focus on organizations. In this context attempts are made to identify characteristics of organizations that enhance or hinder innovation adoption.

To realize the objectives of this project, themes common to both diffusion of innovation and adoption of innovation perspectives have been used, although emphasis will be placed on the adoption of innovation within an agency. Both perspectives share similar theoretical foundations. The stages involved in the adoption of an innovation by an organization and the diffusion of innovation process are very similar. Many innovations require a lengthy period from the time when they become available to the time they are implemented by the organization. The adoption of an innovation by an organization faces similar barriers to those in the diffusion of innovation. Although the adoption of a new idea by an organization is intended to contribute to the effectiveness of the adopting organization, it is often a difficult task. The introduction of an innovation to an organization requires members of the organization to adjust to changes in organizational structure and behaviour and power relationships within the organization (Tichy and Devanna, 1990). An innovation may be an improvement on the idea or product that it supersedes, but it does not mean that the innovation is necessarily adopted. Consequently, the primary objective of organizational innovation research is to . . .

> identify characteristics of organizations that successfully adopt a combination of innovations over time and are effective. (Damanpour 1988, p.547).

Adoption of innovation includes the activities that lead to a decision to adopt as well as the activities which facilitate the implementation and continued use of an innovation. Researchers in the field of innovation research have developed a variety of constructs to describe the process of the adoption of innovation. These constructs are also used to describe the adoption of innovation by organizations. Leonard-Barton (1988) uses a two stage approach to describe the diffusion process. Stage 1 is the Innovation Adoption Decision - this is the 'go/no-go' decision made by a key individual assessing an innovation for use by their organization. Stage 2 involves the Innovation Response - the attitudual and behaviourial stance taken within an organization by users of an innovation. The scheme concentrates on the behaviourial aspects of individuals using an innovation. Although the concept of an Innovation Adoption Decision is helpful, the focus of this study does not involved an indepth assessment of attitudes and behaviours of users of innovation.

A number of researchers have used a multi-stage approach to describe the adoption of innovation. Pierce and Delbecqu (1977) and Zmud and Apple (1986) developed schemes in which innovation is divided into three stages: Initiation, Adoption and Implementation.

> Initiation refers to an idea or proposal that when adopted and implemented will lead to the enactment of some change within the organization.
>
> Adoption represents a decision being made by the appropriate decision makers providing mandate and resources for the change.
>
> Implementation is the installation of the adopted idea into a sustained recognizable behaviour pattern within the organization.

Organizational activities will occur at the same time, thereby blending these innovation stages. Rogers' (1983) two phase model does not consider the adoption component separately. Rogers (1983) and Damanpour (1988) divided the innovation process into Initiation and Implementation.

> Initiation involves information gathering, conceptualizing and planning for the adoption of an innovation, leading up to the decision to adopt.

The data collected for this study suggests that the majority of activities presently undertaken in VICs regarding computer use can be classified an being part of the initiation process. For this reason, further differentiation of this phase of the innovation process is necessary. Pennings (1987) has described the initiation phase as involving the following key features:

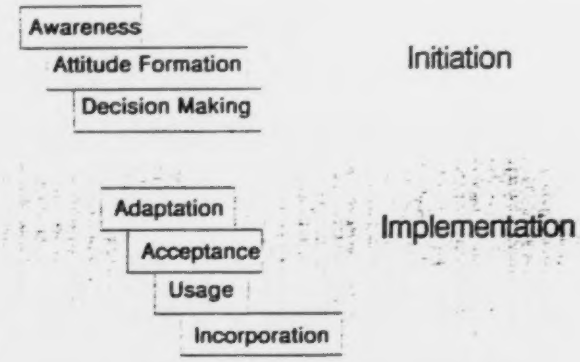
> Recognition or awareness of an innovation: The first knowledge than an innovation exists.
>
> Attitude Formation: Analysis of the innovation and its attributes and subsequent formation of preference and utility.
>
> Decision Making: Acceptance or rejection.

The next major step in the adoption process is implementation.

> Implementation includes all the events, action and decisions involved in putting an innovation to use.

The activities involved in the initiation and implementation phases are discrete. This perspective acknowledges that particular activities are only associated with each division and that these activities commonly occur at the same time in an organization. Zmud and Apple (1986) further break down the implementation stage of this process into four stages:

Figure 2.1 Adoption of Innovation Continuum


Awareness
Attitude Formation
Decision Making
Initiation
Adaptation
Acceptance
Usage
Incorporation
Implementation

Adapted from Rogers (1983), Damanpour (1986) and Zmud and Apple (1986)

> Adaptation: Those activities directed toward an innovation, the organization, and the organization's members associated with fitting an adopted innovation into the workplace.
>
> Acceptance: Those activities undertaken to induce organizational members, who works with or through an adopt innovation, to commit themselves to introduce the innovation into the workplace.
>
> Usage: Those activities exhibited by an organization's members in applying adopted innovation in the pursuit of work objectives.
>
> Incorporation: Those activities associated with embedding an adoption innovation within an organization's operational and managerial work system.

Figure 2.1 illustrates the adoption of innovation continuum used in this study.

C. Organizational Innovativeness

This study is concerned with the innovativeness of the organization and not the specific innovations themselves. Organizational Innovation is the process by which new devices, techniques, methods or concepts are introduced into organizations (Rogers, 1983). Innovativeness is:

> . . . the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a social system (Rogers 1983 p.36).

Rogers (1983) developed a method of categorizing adopters of innovation. Based on a normal frequency distribution, categories are produced by determining the average time of adoption and calculating standard deviations from this mean. Using this approach, Rogers developed five groups. His work also involved the development of profile of characteristics of the individuals within these groupings. The dominant characteristics of each adopter category are not the focus of this research project, therefore each category will be described in only general terms.

Innovators are the first to use a particular innovation. The innovators are venturesome and very eager to try new ideas. The early adopters look to the innovators for advice and information about the innovation. As early adopters are not too far ahead of the average individual in innovativeness, they tend to serve as a role model for may other members of a social system (Rogers, 1983). The early majority adopt new ideas just before the average member of a social system. The early majority may deliberate for some time before completely adopting a new idea. The late majority adopt the ideas just after the average member of a social system. This group may adopt a new idea due to economic necessity and pressure by peers within the social system. Innovations are approached with a sceptical and cautious air, and the late majority do not adopt until most others in their social system have done so.

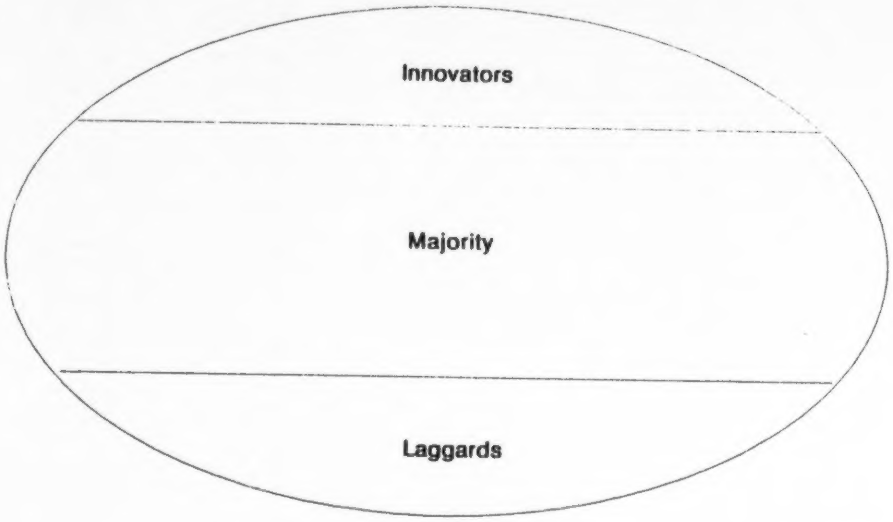
Laggards are the last in a social system to adopt an innovation. They are suspicious of change and tend to make decisions on what was done in the past. Rogers (1983) notes that the word 'laggard' has negative connotation associated with it and also denotes a strong pro-innovation bias. The word 'laggard' will be used for this project simply as a means of identifying a group. A three category model consisting of the innovators, the majority, and the laggards will be used for this study. The three category model was more appropriate than the five category model in light of the type of data collected in the survey and the survey response rate. This adaptation of the organizational innovativeness model described by Rogers (1983) is found in Figure 2.2.

D) Types of Innovation

Innovation is the adoption of an idea or behaviour - whether a product, device, system, process, policy, program, or service - that is new to the adopting individual, group or organization (Damanpour, 1988). The literature suggests that there is a distinction between administrative versus technical innovation. The social structure of an organization is affected by administrative innovation. These innovations influence the organizational structures and administrative processes of an organization. Technological innovations influence the basic work activity of the organization, that is the development of new technologies, products and services. (Damanpour, 1988, Van De Ven, 1986).

Researchers including Damanpour (1988), Zmud (1984) and Kimberly and Evanisko (1981) have found that the type of innovation is affected differently by various organizational variables. Van De Ven (1986), however, disputes this

Figure 2.2: Organization Innovativeness


Innovators
Majority
Laggards

(Adapted from Rogers, 1983)

separation of administrative and technological innovation. He suggests that most innovations introduced into an organization involve both technological and administration components. This interaction between technological and administrative innovation is acknowledged in this study. No attempt has made to separate these two components.

E. Elements that Influence the Innovation Process

The adoption of innovation continuum (initiation and implementation phases) are affected by various organizational, technical and human factors. The final means of examining the adoption of innovation process is to identify the elements that influence the adoption process. Elements have been recognized as being associated with an organization's adoption of innovation (Zmud and Apple, 1986). These elements can be placed in one of three major categories.

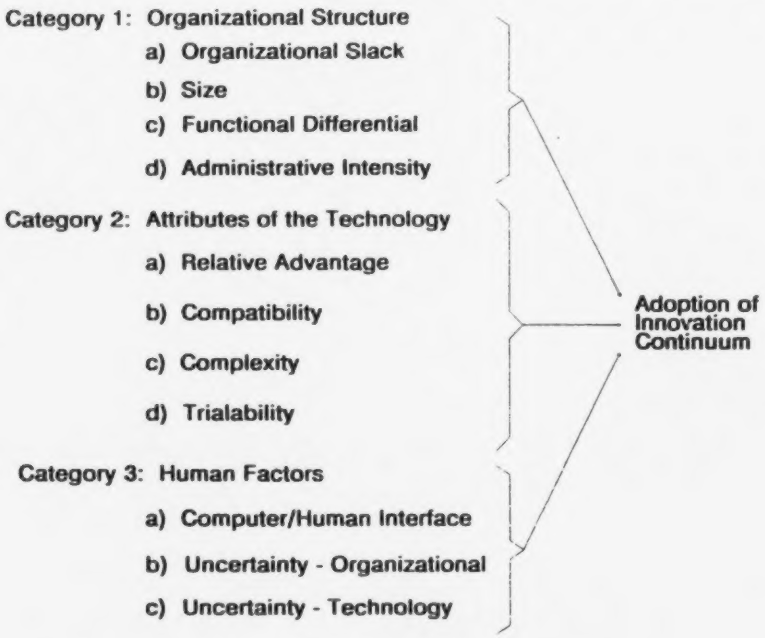
Category 1: The Organizational Structure of the Agency Adopting Computer Technology.

Category 2: The Attributes of the Technology.

Category 3: Human Influences

Figure 2.3 illustrates these factors. These three categories are not mutually exclusive but are interlinked. The structure of the organization can affect the adoption of innovation, while the implementation of the innovation can alter the organizational structure of the organization (Markus and Robey, 1988). Furthermore, the implementation of

Figure 2.3 Elements that Influence the Innovation Process


Category 1: Organizational Structure
a) Organizational Slack
b) Size
c) Functional Differential
d) Administrative Intensity
Category 2: Attributes of the Technology
a) Relative Advantage
b) Compatibility
c) Complexity
d) Trialability
Category 3: Human Factors
a) Computer/Human Interface
b) Uncertainty - Organizational
c) Uncertainty - Technology
Adoption of Innovation Continuum

innovation occurs within the context of the organization. People within the organization are affected by the introduction of an innovation, and in turn affect the innovation process.

Elements that influence the adoption of innovation in organizations have been identified by a number of researchers in this field. In 1971, Rogers and Shoemaker examined over 1,500 studies that dealt with innovation. Therefore it is necessary to look at this literature selectively. Furthermore, there was a explosion of scholarly activity in this field with the development of management information systems (MIS), the growth and development of information technology, and the introduction of microcomputers in the workplace (Kwon and Zmud, 1986). The affects of the elements on the adoption of innovation process can be found in Tables 2.3 (a), (b) and (c). These tables summarize selected references from the innovation literature. A brief description of the elements selected to examine the adoption of innovation process regarding computers in VICs is, however, necessary.

i) Category One - Organizational Factors (Table 2.3a)

Organizational slack, size and functional differentiation were selected to examine the impact of organizational factors on the use of computers in visitor information centres. These factors are briefly described:

a) Organizational Slack - is the degree to which uncommitted resources are available to an organization.

The existence of slack means that an organization can afford to: 1) explore new ideas in advance of an actual need; 2) purchase costly innovations; 3) absorb failure; and 4) bear the costs of instituting innovations (Damanpour, 1987). From a Canadian perspective Bethcherman and McMullen (1986) conducted a nation-wide survey of employers regarding their experiences with computer-based technological change. They found that over half of the respondents identified the cost of equipment as an obstacle to introducing technological change. Following the cost of equipment, a lack of technically qualified personnel and a low or uncertain return on investment were the most often reported barriers to technological change. Due to limited data, organizational slack will be evaluated using organizational funding and revenue generation information.

Along with organizational slack, organizational factors include:

b) Size - refers to the numbers of staff involved in an organization and the number of people to be served by the department or agency.

c) Administrative Intensity - also referred to as the managerial ratio. This is the ratio between managerial and support staff.

d) Functional Differentiation - represents the extent to which an organization is divided into subunits (Kimberly and Evanisko, 1981).

Table 2.3a
Findings of Selected Factors which Influence the Adoption of Innovation

Organizational Factors		
ELEMENT	AUTHOR	FINDINGS
Administrative Intensity	Damanpour (1987)	Positive Relationship
Organizational Slack	Damanpour (1987)	Positive Relationship
Size	Baldridge and Burnham (1975)	Positive Relationship
	Kimberly and Evanisko (1981)	Positive Relationship
	Zmud (1984)	Weak Positive Relationship
	Damanpour (1987)	Weak Positive Relationship
	Tourism Canada (1988)	Positive Relationship

ii) Category Two: Attributes of Innovation (Table 2.3b)

The Hickling Report (1988) used relative advantage, compatibility, complexity and trialability to evaluate the adoption of computer technology by the Canadian tourism industry. These attributes were also used in this study.

> a) Relative Advantage - is the degree to which an innovation is perceived as better than the idea it supersedes. The relative advantage of an innovation is perceived by members of a social system. It is not an objective assessment of the innovation.

b) Compatibility - is the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adoption.

c) Complexity - is the degree to which an innovation is perceived as relatively difficult to understand and to use.

d) Trialability - is the degree to which an innovation maybe experimented with on a limited basis.

Table 2.3 b
Findings of Selected Factors which Influence the Adoption of Innovation

Attributes of Technology

ELEMENT	AUTHOR	FINDINGS
Trialability	Rogers (1983)	Positive Relationship
	Tourism Canada (1988)	Unsupported
Complexity	Rogers (1983)	Positive Relationship
	Tourism Canada (1988)	Influenced by Size **
Relative Advantage	Rogers (1983)	Positive Relationship
	Tourism Canada (1988)	Positive Relationship
Compatibility	Rogers (1983)	Positive Relationship
	Tourism Canada (1988)	Positive Relationship

** The size of the organization was found to influence the perception of complexity of computer system. Larger organizations have staff members who can manage the system. In smaller organizations, such experts were not always available, therefore non-experts were left in charge of the system. In this case, complexity of the system directly influenced the adoption of this technology by the organization.

iii) Category Three: Human Factors (Table 2.3c)

The adoption of innovation is also influenced by people within an organization. The following three human factors have been in this study: a) Leadership commitment to innovation; b) Product sponsor and champion, and c) Awareness and uncertainty.

> a) Leadership commitment to innovation: Long term resources must be to committed to the project. Decision makers must view new technology as a way of effectively achieving organizational objectives. Furthermore, they must remain committed to the project from its initiation to the implementation of the computer system.
>
> b) Product sponsors and champions: A product sponsor or champion can be best described as an enthusiastic salesperson for an new idea. An innovation requires someone who has political influence and access to necessary resources within an organization. Such champions guide innovations through the organizational decision-making process, and their presence is particularly important during the time of the initial adoption decision (Leonard-Barton, 1988).
>
> c) Awareness: The implementation of an innovation often occurs when key members of an organization recognizes either a need for change or the emergence of a new technology that promises to enhance organizational performance. The use of an innovation in an organization must first be recognized by key members.
>
> d) Uncertainty: Conditions external to the organization will have an impact on the internal functioning of the organization (Pierce and Delbecq, 1977; Tichy and Devanna, 1990). The strategic, managerial, and operational transactions will be affected by external factors, including economic, political and social concerns.

Table 2.3 (c)
Findings of Selected Factors which Influence the Adoption of Innovation

Human Factors

ELEMENTS	AUTHORS	FINDINGS
Commitment by Leaders	Pierce and Delbecqu (1977)	Positive Relationship
	Zmud (1984)	Positive Relationship
	Leonard-Barton and Deschamp (1988)	Unsupported**
Sponsors and Champions	Kanter (1983)	Positive Relationship
Awareness	Zmud (1984)	Positive Relationship
	Tourism Canada (1988)	Positive Relationship

** Leonard-Barton and Deschamp (1988) found that the views of management regarding innovation influenced only some staff members. Individual characteristics of staff members was found to be important in the acceptance of the innovation.

F. Summary

The framework of this study involves a number of complex issues that have not been fully explored in the context of recreation and leisure studies. The relationship between recreation and leisure studies, and tourism is poorly understood. The examination of computers in recreation and leisure is in its infancy. Although organizational studies have used innovation research to examine the use of computers within an organization, recreation and leisure has not employed this theoretical perspective. The adoption of innovation literature provides an opportunity to examine the relatively recent use of computers in VICs from an organizational perspective. The adoption of innovation continuum, organizational innovativeness, and the factors which influence the adoption process were outlined in this chapter. The following chapter outlines the methodology used to incorporate this theoretical perspective.

III. METHODOLOGY AND THE TREATMENT OF THE DATA

A. Introduction

Although research has been published concerning computers in VICs in the United States (Hultsman, 1988, 1989, and Gartner and Verbyla, 1986) little as been written which specifically pertains to the Canadian experience. An aspect of this research project involved the collection of descriptive information regarding the use of computers in VICs in Canada. To this end, several topics were examined including:

1) basic information regarding the number of visitors using VICs, the number of VICs operated by the government agency and staffing issues.

2) the general use of computers by public parks and tourism agencies which operate VICs.

3) past, present and future use of computers in visitor centres.

4) funding and barriers to computerization in VICs.

A self administered questionnaire was used to gather this data. The Total Design Method (TDM) developed by Dillman (1978) was used in the design of this questionnaire. Secondary sources were also used to achieve the objectives of this study.

B. The Instrument

A copy of the self administered questionnaire used in this study can be found in Appendix 1. The questionnaire was designed by incorporating information from a number of sources. These sources included the work of Damanpour (1987, 1988), Rogers (1983), Hickling (1988), Kimberly and Evanisko (1981), and from interviews with Colin Sparrow-Clarke from Alberta Tourism.

There are six sections to the questionnaire addressing in part the subproblems of the thesis. These sections consist of: background information, general computer use, present use of computers in VICs, funding of computers in VICs, past experiences with computers in VICs, barriers to computerization in VICs and future trends. A brief description of these sections and their contents is provided.

i) **Background Information** (Based on Section A of the questionnaire.)

This section consisted of seven questions which were used to gather general information regarding the agency. The name of the agency responsible for VICs, the title of the line staff who work in VICs, number of outlets, number of employees, peak seasons, number of visitor who use VICs, and the duties performed in VICs were asked in this section.

ii) General Computer Use (Based on Section B of the questionnaire)

The purpose of this section was to gather information regarding the general use of computers within the agency. This information was subsequently used in order to determine organizational innovativeness. The first question determined whether computers were presently used by the organization for any purpose. The following questions examined the use of computer hardware and computer applications by the organization. Sheldon's (1987) work on the use of computer technology by government agencies was compared to the findings of this aspect the study.

iii) Present use of Computers in VICs (Based on Section C of the questionnaire)

This is the main section of the questionnaire. Once again this section provided information regarding the innovativeness of the organization, and the basic descriptive information regarding the use of computers in VICs. The twenty two questions in this section examine the types of hardware and software used in VICs, access to computer terminals, information available on computer, and agency satisfaction with their present computer system.

iv) Funding Strategies (Based on Section D of the questionnaire)

Questions concerning capital and operational cost are covered in this section. In addition, questions relating to the relationship between public and private agencies is examined.

v) Past Experiences with Computers in VICs (Based on Section E of the questionnaire)

This section is considered to be of the upmost importance to Travel Alberta. The respondents were asked questions regarding the types of systems they have used in the past, how satisfied they were with these systems, and why they were no longer using them.

vi) Barriers to Computerization (Based on Section F of the questionnaire)

The work of Rogers (1983) and the Hickling Report (1988) was used to compile these questions. Likert questions were used to obtain information regarding funding obstacles, trialability, complexity, relative advantage, and compatibility of computers to the agencies operating procedures.

vii) Future Trends (Based on Section G of the questionnaire)

In this section the respondents were asked about the trends they see in computer use in VICs over the next five years. In addition to this, the respondents were asked about future trends in computer hardware.

C. Questionnaire Design and Research Decisions

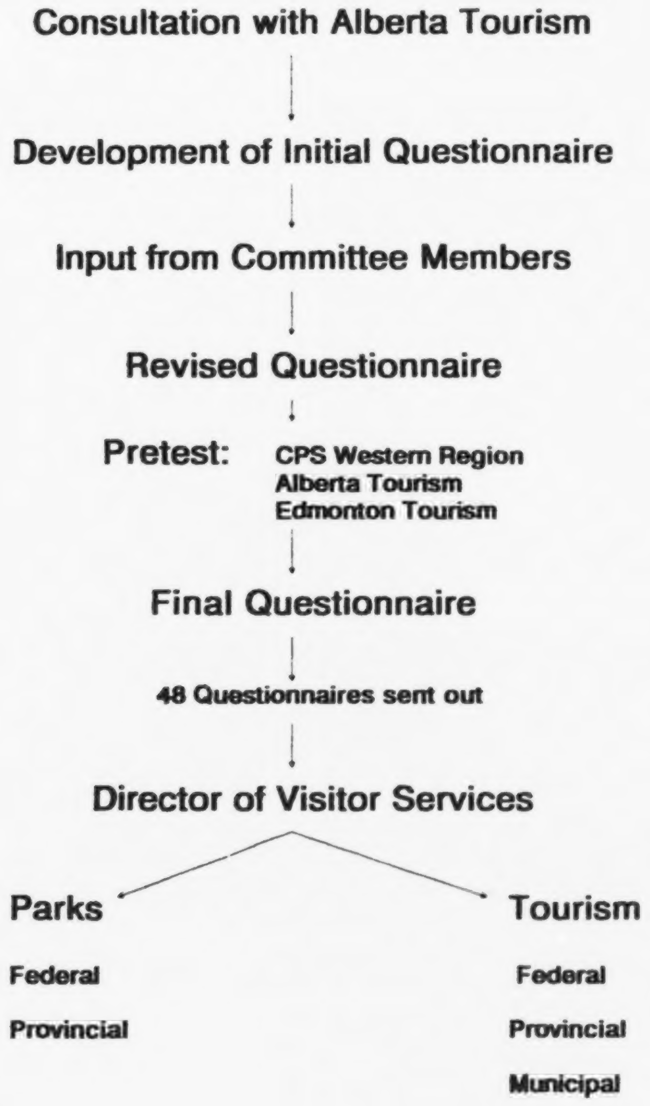
The steps involved in the development and distribution of the questionnaire used in this study are illustrated in Figure 3.1.

i) Questionnaire Design and Distribution

The questionnaire was designed over a period of five months. As the mailing costs of this questionnaire were partially covered by Alberta Tourism, a substantial amount of the initial content was determined though consultation with this agency. Various versions of the questionnaire were reviewed by members of the thesis committee. The questionnaire was pre-tested on representatives from Tourism Alberta, Edmonton Tourism and the Canadian Parks Service, Western Region. These agencies were chosen as they represent the three levels of government that administer VICs. Responses and suggestions made by the pre-test group were incorporated into the final version of the questionnaire. As the questionnaire was used to survey both parks and tourism agencies, small variations in wording were required. Therefore, three formats of the questionnaire were generated:

Figure 3.1

Steps Involved in the Development and Distribution of Questionnaire


Consultation with Alberta Tourism
Development of Initial Questionnaire
Input from Committee Members
Revised Questionnaire
Pretest:
CPS Western Region
Alberta Tourism
Edmonton Tourism
Final Questionnaire
48 Questionnaires sent out
Director of Visitor Services
Parks
Federal
Provincial
Tourism
Federal
Provincial
Municipal

1) Parks; 2) Tourism; and 3) Municipal Tourism Agencies.

The questionnaire was presented in a booklet format. The booklet design was chosen because it gave the questionnaire a professional appearance and also reduced mailing costs. Each questionnaire was accompanied by a cover letter printed on Alberta Tourism letterhead. The cover letter explained the purpose of the research and that both Alberta Tourism and the (then) Department of Recreation and Leisure Studies at the University of Alberta were involved in the study. A pre-addressed envelope was also enclosed in the questionnaire package.

The initial questionnaire was sent to forty eight federal and provincial tourism and parks agencies on February 20, 1990. A first reminder was sent to these agencies on February 28, 1990. The respondents were requested to return the completed questionnaire by March 19, 1990. Questionnaires were sent to selected municipal tourism agencies on February 27, 1990. A first remainder was sent to municipal tourism agencies on March 3, 1990. Further reminders and additional questionnaires were sent to selected agencies on March 20, 1990. By March 20, 1990, no questionnaire sent to the province of Ontario had been returned, therefore replacement questionnaires were sent to Ontario Tourism and Recreation, Ontario's Ministry of Natural Resources, and Toronto Tourist and Convention Centre. Other packages were sent to the Canadian Parks Service (Head Office), Vancouver Travel Infocentre, and Canada's Capital Visitor and Convention

Bureau.

ii) The Subjects

Visitor information centres are operated by government, private and voluntary organizations. In Canada, government has traditionally been involved in this tourism function, although there is evidence that other sectors are assuming this role. The government agencies which operated VICs are the focus of this research. Although comparisons could be made between public and privately run VICs, it was decided only to examine government funded visitor information centres to ensure a homogeneous sample.

The rationale to survey only government operated agencies must be discussed. This portion of the research project was financially supported by Alberta Tourism. Colin Sparrow-Clarke, Director of Systems and Computing Services, was interested in the how computers were used in VICs run by government agencies across Canada. As a result of this support it was determined that VICs private agencies, and individual VICs run by government agencies would be excluded from this survey.

Beyond this, other methodological issues were important in determining the unit of analysis for this project. National comparisons could be made since all ten provinces and two territories operate VICs. Government funded VICs operate under similar organizational and contextual factors whereby permitting comparisons to be made among the agencies which operate these centres.

Time and cost were important factors to consider in the undertaking of this study, therefore individual VICs were not contacted. Although private organizations do operate individual information centres, there is no private organization which operates a network of VICs, in Canada. Therefore, privately operated VICs were excluded from this survey.

The sample used in this study consisted of the entire population of government agencies which operate visitor information centres across Canada. Tourism and parks agencies commonly administer visitor information centres. Therefore, in order to accurately generate a profile of the use of computer in these centres it was necessary to survey both parks and tourism agencies. Furthermore, federal, provincial and municipal levels of government operate these parks and tourism information centres. Agencies of the Canadian Parks Service, Tourism Canada, provincial and territorial parks and tourism organizations and selected municipal tourism agencies were contacted. The following are the criteria used to select municipal tourism agencies surveyed in this study:

a) Selected municipal tourism agencies must be autonomous from provincial or federal agencies.

b) Selected municipal tourism agencies must not be directly operated by private sector tourism associations.

c) Selected municipal tourism agencies must be operated on a year round basis.

D. Response Data

One of the issues involved in undertaking the survey was deciding who should be the specific respondent within the agencies contacted. For example, whereas the director of visitor services was likely to have a better understanding of the overall operation of the visitor centres, persons responsible for the computer system were likely to have a better working knowledge of the hardware and software of the system itself.

Another issue affecting the results of this study was the relatively poor response rate. The agencies that were excluded from the analysis and the rational behind these decisions can be found on Table 3.1. The original number of respondents was reduced due to organization structure and mandate of the particular government agency. For example, tourism and a parks questionnaire were sent to New Brunswick. This was not necessary as New Brunswick, Parks and Tourism are combined in one ministry called Tourism, Recreation and Heritage. Tourism Canada does not operate visitor information centres as defined by this survey. The growing link between the public and private sectors was demonstrated in the case of Saskatchewan. Saskatchewan's provincial government does not directly operate VICs, rather these centres are administered by the Tourism Industry Association of Saskatchewan, although they receive government funding.

Although considerable effort was taken in generating the

Table 3.1 Agencies Excluded From Statistical Analysis

AGENCY	RETURNED	EXCLUDED	COMMENTS
CPS Prairie & Northern Region	NO	YES	Two surveys sent to this agency.
CPS Quebec Region	NO	YES	Two surveys sent to this agency.
Sask. Parks	NO	YES	Two reminders sent to this agency.
Ontario Parks	YES	YES	Agency does not operate VICS.
Ministere du Loisir de la Chasse et de la Peche	NO	YES	Researcher failed to sent survey to agency.
Nova Scotia Parks	YES	YES	Agency does not operate VICS.
Nfld. Parks Division	NO	YES	Two reminders sent to this agency.
P.E.I. Parks	NO	YES	Two reminders sent to this agency.
Yukon Parks	NO	YES	Two reminders sent to this agency.
N.W.T. Parks	NO	YES	Two reminders sent to this agency.
Tourism Canada: Headquarters Alberta Nova Scotia	YES	YES	Tourism Canada does not operate VICs.
Tourism Canada: BC, Man, Sask, Ont, Que, NB, PEI,Yukon	NO	YES	Tourism Canada does not operate VICs.
Ontario Recreation and Tourism	NO	YES	Agency sent reminders, extra survey & phoned.
Tourisme Quebec	NO	YES	Agency sent reminders and extra survey.
Winnipeg Convention Centre	NO	YES	Reminders sent to agency

mailing list, not all the agencies selected for this study received the questionnaire package. Tourism Canada offices in Saskatchewan and Nova Scotia, and Head office of the Canadian Parks Service received the first reminder but had not received the questionnaire. Replacement questionnaires were immediately sent to these agencies. This incident suggests that not all the potential respondents received the questionnaire package. This must obviously affect the return rate.

The loss of these questionnaires could be explained by incorrect mailing addresses, re-structuring of government departments, the use of vague addresses. Alberta Tourism relocated during time when the questionnaire for this study was being developed. A copy of a questionnaire was sent to Alberta Tourism's former address but this questionnaire was lost and a replacement questionnaire was later hand delivered. Travel Manitoba has undergone a number of corporate restructurings. For instance, prior to 1987 Travel Manitoba was a division of the Department of Business Development and Tourism. After 1987, Travel Manitoba became part of Industry, Trade, and Tourism.

Locating annual reports, which were used to obtain supplementary information, was difficult due to the restructuring of government departments. The term 'Director of Visitor Services' was used to address the questionnaire package. This term did not always correspond with the term used by specific organizations. Consequently, some the questionnaires were undoubtably lost in the organizations due to the use of this vague address.

Of the forty eight questionnaires sent to agencies which operate VICs across Canada, only twenty eight questionnaires were returned. Three Tourism Canada agencies responded to the questionnaire. From these responses it was concluded that Tourism Canada does not operate VICs as defined by this project. Tourism Canada was therefore excluded from the study. Both Nova Scotia Parks and Ontario Parks do not operate VICs as defined by this study. New Brunswick Tourism, Recreation and Heritage involves both tourism and parks operations, and consequently was counted only once. However, British Columbia represents a special case. The Ministry of Tourism and Culture does not directly operate VICs, therefore as this study examines government operated VICs this agency was excluded from the statistical analysis of the study. British Columbia was included in other aspects of analysis such as organization innovativeness.

A breakdown of response rate by agency type is indicated in Table 3.2. The revised overall response rate was 69 percent. Provincial Parks agencies present the lowest response rates consequently affecting the overall response

Table 3.2
Response Rates

AGENCY	SENT	RETURNED	ADJUSTED* (N)	USABLE	RESPONSE RATE
Canadian Parks Service	6	4	6	4	66.6% (4/6)
Provincial Territorial Parks	11	6	9	4	44.4% (4/9)
Federal Tourism	12	3	NO VICs	-	-
Provincial Territorial Tourism	12	9	10	8	80% (8/10)
Municipal Tourism	7	6	7	6	85.7% (6/7)
TOTALS					
ENTIRE SURVEY	48	28	32	22	68.8 (22/32)

(*Adjusted refers to the agenices that meet the criteria used to define a VIC in the study.)

rate of this questionnaire. This low response rate, in turn, affects the direction of the study. (This situation is discussed later in this chapter). Although at least one questionnaire was returned from all the provinces and territories surveyed, the intent of the study to provide an overview of the Canadian experience with computers in VICs could not be fulfilled due to the failure of some agencies to respond to the survey. Ontario Ministry of Tourism and Recreation failed to respond even after repeated attempts to contact this agency. Tourism Quebec also failed to return a

TABLE 3.3
Responding Agencies
Computer Use

RESPONDING AGENCY	COMPUTERS GENERAL IN USE	COMPUTERS IN VICS
CPS Headquarters	YES	NO
CPS Atlantic	YES	NO
CPS Ontario	YES	NO
CPS Western	YES	YES
Alberta Recreation & Parks	YES	NO
B.C. Ministry of Parks	YES	NO
Manitoba Parks	YES	NO
New Brunswich Ministry of Tourism Recreation & Hertiage	YES	NO
Alberta Tourism	YES	NO
P.E.I. Tourism	YES	YES
Sask. Economic Devel. and Tourism	YES	NO
Man. Industry, Trade and Tourism	YES	YES
Nova Scotia Department of Tourism & Culture	YES	YES
Nfld. Department of Development & Tourism	NO	NO
Yukon Tourism	NO	NO
N.W.T. Tourism	YES	NO
Calgary Tourism and Convention Centre	YES	NO
Edmonton Tourism	YES	NO
Greater Montreal Convention Bureau	NO (?)	
Canada's Capital Visitor and Convention	YES	NO
Toronto Convention Bureau	YES	NO
Vancouver Tourism	YES	YES

questionnaire.

A list of the agencies examined in this study is found in Table 3.3. This table is arranged in order of federal and provincial parks, followed by provincial and municipal tourism agencies. The table also provides information regarding computer usage by these agencies.

E. Analysis of the Data

The subproblems identified in this study will be examined using three approaches. These approaches are:

1) Relative Innovativeness of the Agency Regarding the Use of Computers or Organizational Innovativeness.

2) Adoption of Innovation Process.

3) Factors Influencing the Use of Computers in Visitor Information Centres.

i) Organizational Innovativeness

Following the scheme used by Rogers (1983) an index was devised to illustrate organization innovativeness as it pertains to the use of computer technology. Organizations adopted an array of computer based innovations and used these innovations for a number of purposes. Once again, it must be noted that this research project examines the innovativeness of organizations not particular innovations. With this in mind, three categories were used to describe the innovativeness of the agencies involved in this project. These categories can be found in Table 3.4.

Table 3.4
Adoption of Innovation Index

Stage	Definition	Characteristics of stage
INITIATION		
Recognition or awareness	Awareness of computers in VICs	Awareness of computers in VICs operated by other agencies.
Attitude formation	Gathering of information about computer use in VICs	Work units within agency or consultants gather information about the use of computers in VICs
Decision Making	Acceptance or rejection of the introduction of computers in VICs	Using the data collected in the previous stage, decision makers assess the potential of using computers in VICs
IMPLEMENTATION		
Adaption	Technical and organizational changes occur due to the introduction of computers in VICs	Computer programs are refined. Staff training occurs. Initial evaluation of the system takes place.
Acceptance	System is used for daily operations of VICs.	Initial problems associated with the system are solved. Staff is becoming comfortable working with the system. Long term funding is considered.
Usage/ incorporation	System is considered a standard tool for VICs operation.	Long term funding sources are secured. Upgrading of system occur. Systems are used throughout the VICs network. Expansion of the system

ii) Adoption of Innovation

The diffusion process used in this project has been divided into two stages (see chapter two): 1) Initiation and 2) Implementation. Due to limitations of the questionnaire not all respondents could be categorized using this classification scheme. Answers and comments made by some of the respondents, regarding the use of computers in visitor information centres, provide the criteria for classification. The index used to determine the stage of adoption is adapted from Pennings (1987), Damanpour (1988), Zmud and Apple (1986), and Rogers 1983). Once again, the general use of computer technology in VICs is the focus of research, not the use of specific components of computer technology. The criteria used to generate the Adoption of Innovation Index is found in Table 3.5

Table 3.5
Criteria to Assess
Organizational Innovativeness

LEVEL	NAME	CRITERIA
Level 1	Laggards	Computers are not used by the agencies responsible for VICs.
Level 2	Majority	Computers are used by the agencies that operate VICs, but are not used in VICs.
Level 3	Innovators	Computers are used in VICs

iii) Factors that Influence the Adoption of Innovation

Respondents were asked questions regarding barriers to computer use in information centres. These Likert questions examined areas such as attributes of the technology and human influences. It became obvious upon examining the questionnaires that more information about these organizations was required to complete the objectives of this research project. Secondary source materials have been for this purpose. Annual reports, newspaper clippings, magazine and journal articles were used to piece together the contextual factors effecting these agencies. Park agencies have been excluded from this portion of the analyze due to the lack of data on their organizational structure. The criteria to evaluate the organizational factors which influence the Adoption of Innovation process are found in Table 3.6(a). The remaining two categories of factors which influence the adoption process, attributes of the innovation, and human factors were previously discussed in chapter 2. Tables 3.6 (b,c,) outline the criteria used to examine these factors.

Although this study is primarily qualitative in nature, components, including the factors that influence the adoption of innovation, were analysed using a quantitative approach. A code book was developed and data was manually coded onto data sheets upon the gathering of data. A numbers of computer packages were used to analyzed the data. The spreadsheet program First Choice was used to input the data. Statistical programs including dBASE STATS and CoStat were used to

Table 3.6 (a)
Factors Which Influence the
Adoption of Innovation Process

ELEMENT	DEFINITION	QUESTIONNAIRE SOURCE
ORGANIZATIONAL FACTORS		
Revenue	The money generated through tourism as recorded by the agency	Annual Reports
Funding	a) The total expenditures of the agency. b) Expenditures of the subdivision responsible for VICs. c) Expenditures of the unit directly responsible for VICs.	Annual Reports
Size	a) The number of the staff employed by the agency. b) The number of users of VICs	a) Annual Reports b) Section A
Administrative Intensity	% of the number of supervisors over the number of non-supervisors	Annual Reports
Functional Differentiation	The extent to which the agency is divided into subunits.	Annual Reports

Table 3.6 (b)
Factors Which Influence the
Adoption of Innovation Process

ELEMENT	DEFINITION	QUESTIONNAIRE SOURCE
ATTRIBUTES OF INNOVATION		
Relative Advantage	The degree to which an innovation is perceived as better than the idea it supersedes.	Section F (8)
Compatibility	The degree to which an innovation is perceived consistent with the existing values, past experiences, and needs of potential adoption.	Section F (6)
Complexity	The degree to which an innovation is perceived as relatively difficult to understand and use.	Section F (3) (4)
Trialability	The degree to which an innovation may be experimented with on a limited basis.	Section F (7)

Table 3.6 (c)
Factors Which Influence the
Adoption of Innovation Process

ELEMENT	DEFINITION	QUESTIONNAIRE SOURCE(S)
HUMAN FACTORS		
Leadership Commitment to Innovation	Decision makers are committed to the project from its initiation to the to implementation of the innovation. Long term resources are committed to the project.	Section C and D Annual Reports Personal Communication
Product Sponsors or champions.	An enthusiastic salesperson for the new idea. Someone who has political influence and access to necessary resources.	Section C Personal Communication
Awareness/ Uncertainty	a) The use of an innovation occurs when key members of the agency recognizes the need for change or the emergence of new technology which promises to enhance agency performance. b) Unplanned or uncontrollable conditions external to the agency which will have an impact on the internal operations of the agency.	Section F Personal Communications

generate descriptive information.

F. Summary

The intent of this chapter was to describe in detail the research methodology used to generate the information required to achieve the objectives of this study. The design of the questionnaire was outlined in the first portion of this chapter. This was followed by a discussion of the process involved in the distribution of the questionnaire, the subjects to which the questionnaire was targeted, and response rate information. The final segments of this chapter presented the criteria used to evaluate the adoption of innovation process, organizational innovativeness, and the factors which influence the use of computers in visitor information centres. The following chapter will present the findings associate with the adoption of innovation process and organizational innovativeness.

IV. THE RESULTS

A. Introduction

This chapter presents the data collected to examine the specific objectives of the study as outlined in Chapter one. These objectives are as follows:

> 1) to determine the hardware and software applications employed for general use by agencies which operate VICs.
>
> 2) to describe the computer systems used in VICs. This description will include hardware and software considerations, funding, access, and advantages and disadvantages of the system.
>
> 3) to classify the agencies as to their innovativeness regarding the use of computer technology in VICs.
>
> 4) to place selected agencies on the adoption of innovation continuum.

Due to the exploratory of this study, the information obtained from the questionnaire and supplemental secondary sources provide an overview of the issues involved in the implementation of computers in VICs.

B. General Information

The data gathered in Section A of the questionnaire provides background information regarding periods of operations and staffing of VICs, visitor statistics and duties of visitor information officers. Staffing considerations,

Table 4.1
Peak Periods of
Responding Agencies

	MONTHS											
Agency	J	F	M	A	M	J	J	A	S	O	N	D
CPS Headquarters					X	X	X	X	X			
CPS Atlantic					X	X	X	X	X			
CPS Ontario					X	X	X	X	X			
CPS Western						X	X	X				
Alberta Parks					X	X	X	X	X			
B.C. Parks						X	X	X	X			
Manitoba Parks							X	X	X			
N.B. Parks						X	X	X	X			
Alberta Tourism					X	X	X	X	X			
Manitoba Tourism					X	X	X	X	X			
Nfld. Tourism						X	X	X	X			
N.W.T. Tourism	X	X	X	X	X	X	X					
N.S. Tourism							X	X	X			
P.E.I. Tourism							X	X				
Sask. Tourism					X	X	X	X	X			
Yukon Tourism						X	X	X				
Calgary Tourism						X	X	X				
Edmonton Tourism							X	X				
Montreal Tourism					X	X	X	X	X	X		
Capital City T.					X	X	X	X	X			
Toronto Tourism					X	X	X	X	X			
Vancouver Tourism				X	X	X	X	X	X	X		

such as the numbers of full time, part time, and seasonal staff, and visitor statistics are used in the following chapter as well as the factors which influence the adoption process. Below is a brief discussion of the periods of operation and visitor information counsellors.

i) Peak Periods

The vast majority of the respondents reported that their peak period of operation is the months of May through to September (Labour Day). Table 4.1 outlines the peak periods of VICs responding to this questionnaire. Agencies responding to this survey expressed three goals related to peak periods. The first, addressed by several agencies was to extend the summer season. Secondly, Vancouver Tourism reported it was developing a marketing program designed to generate more tourism activity in the winter (Vancouver, 1990). Thirdly, Tourism Manitoba was attempting to extend the peak periods into the traditional shoulder period.

ii) Visitor Information Counsellors

The terms used to describe the agency and the staff members which operate VICs are varied and can be found on Table 4.2 (a) and (b). The duties performed by these staff members are consistent across the country. Information provision, as expected, is the primary duty of VICs

Table 4.2 (a)
Branch and Staffing Titles used by
Agencies which operate Visitor Information Services

AGENCY (VICS)	**BRANCH TITLE**	**STAFF TITLE**
PARKS AGENCIES		
CPS Headquarters	Visitor Activities Branch	Information Attendants
CPS Western	Visitor Services	Information Clerks
CPS Atlantic	Visitor Activies	Park Attendants
CPS Ontario	Visitor Services	Information Clerks/ Visitor Centre Attendants
Alberta Parks	Visitor Services	No specific term
B.C. Parks	Visitor Services	No specific term
Manitoba Parks	Visitor Services	Park Interpreters
New Brunswick	Visitor Services	No specific term

counsellors. This service includes the provision of information relating to accommodation, transportation and travel, attraction anMwevents, and leisure opportunities. Park agencies stressed issues of personal safety and leisure opportunities, such as fire hazards and hiking trails (Canadian Parks Service returns). Furthermore, development, implementation, and evaluation of interpretative programs by staff at VICs are concerns solely expressed by park agencies.

Tourism agencies emphasized the promotion of the area, including hospitality, accommodation, attractions, and events information. Visitor counsellors are expected to ensure that all information is accurate and current. Changes in brochure material are commonly suggested by these counsellors to the communication branch of the agency .

Table 4.2 (b)
Branch and Staffing Titles used by
Agencies which operate Visitor Information Services

AGENCY	**BRANCH TITLE**	**STAFF TITLE (VICS)**
TOURISM AGENCIES		
Alta. Tourism	Travel Information	Travel Counsellors
B.C. Tourism	Travel Infonetwork	Travel Counsellors
Man. Tourism	Customer Services	Travel Counsellors
Nfld. Tourism	Visitor Services	Tourist Info. Counsellors
Nova Scotia Tourism	Travel Information Division	Travel Counsellors
P.E.I. Tourism	Visitor Services	Travel Counsellors
Sask. Tourism	Visitor Services	Visitor Info. Counsellors
Tourism Yukon	No Specific Term	Receptionist
Calgary	Visitor Services	Visitor Counsellors
Edmonton	Visitor Services	Visitor Counsellors
Montreal	Info. Services	Information Clerk
Ottawa	Visitor Services	Travel Counsellors
Toronto	Info. Services	Travel Counsellors
Vancouver	Travel Infonetwork	Travel Counsellors

Beyond providing information, visitor counsellors are expected to take part in the gathering of data for statistical and research purposes. Finally, administrative duties such as developing staff schedules, mailing travel information, providing tourist information over the telephone, ensuring adequate inventories of travel information and assorted merchandise are duties typically performed by the VICs staff.

C. Organizational Innovativeness

Chapters Two and Three outlined the three stage classification of organization innovativeness used in this study. These stages are 1) the laggards, 2) the majority, and 3) the innovators. The data used to determine the three classifications used to evaluate organization innovativeness primarily came from the returned questionnaires. Annual reports of the respective agencies provided additional information used in the discussion of these groups. Figure 4.1 illustrates the results of organization innovativeness as determined by the questionnaire.

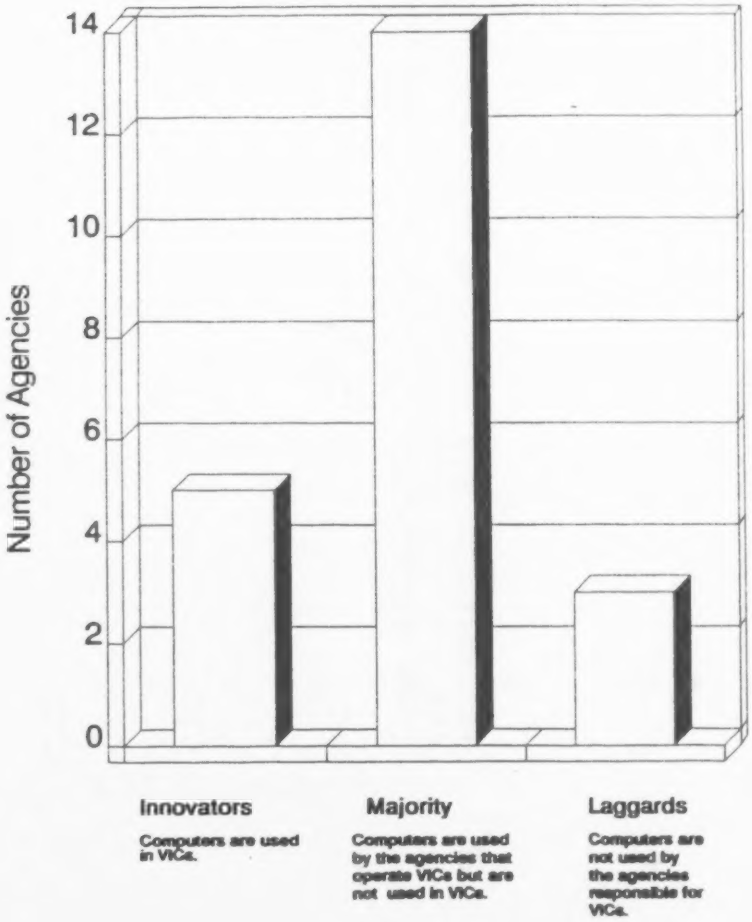
i) Level One: The Laggards

The first group or the laggards consists of those agencies which are not using computers within their organization. Three agencies, Newfoundland Tourism, Yukon Tourism and the Greater Montreal Convention and Tourism Bureau are classified in this group. However, the 1989 annual report issued by the Greater Montreal Convention and Tourism Bureau clearly states that this agency is using computers. The annual reports issued by Yukon and Newfoundland Tourism did not suggest that computers were used within these agencies.

ii) Level Two: The Majority

The second classification used to describe organization

Figure 4.1
Organizational Innovativeness
Use of Computers



innovativeness is the majority. Fourteen of the agencies responding to this survey are using computers within their organizations. This represents 86 percent of the respondents. The computer usage rate increases to 90 percent when the discrepancy between what the survey results indicated and the secondary source regarding the Greater Montreal Convention and Tourism Bureau is taken into account. These findings are compared to those found by Sheldon (1987) in Table 4.3.

A comparison of these findings with those of Sheldon suggest a number of interesting trends in computer usage. Mainframe computers were found to be more common in this study than indicated by the work undertaken by Sheldon (1987). Although this study did not directly examine why tourism and parks agencies use a particular hardware component in the development of their computer systems, other studies suggest the mainframe computer systems may reflect and maintain power relationships existing in the organization. The use of computers as a means of controlling power was described by Kraemer and King (1986, p.492).

> Computing is not in itself a powerful and influential force in organizations. But it may provide the opportunity to reinforce prevailing policies and attitudes toward larger organizational issues. These policies and attitudes are typically shaped by those already in powerful positions, and computing naturally is absorbed as a tool by this elite. . . . Instead of democratizing organizations, computing has been empirically determined to be a powerful tool of the status quo

The use of mainframe computers has been the subject of heated debate in computer magazines such as InfoWorld and PC Magazine. Currid (1991) believes that mainframe computers

Table 4.3
Comparative Findings
Computer Use in Government Agencies

	Sheldon (1986) Percentage	This Study (1990) Percentage	This Study (Numbers)
Overall Response Rate	90	68.8	(22/32)
General Computer Use	84	86.4 (19/22)	Revised 90.9% (20/22)
COMPUTER USE BY TYPES			
Micro	75	57.9	(11/19)
Mini	12	15.8	(8/19)
Mainframe	27	63.2	(12/19)
Networked Micros	initiating process	42.1	(8/19)
APPLICATIONS			
Wordprocessing	75	100	(19/19)
Spreadsheets	54	57.9	(11/19)
Database	50	68.4	(13/19)
Graphics	23	63.2	(11/19)
Statistics	21	not identified	
FAX	not identified	42.1	(8/19)
Electronic Mail	not identified	47.4	(9/19)
Desk Top Publishing	not identified	47.4	(9/19)
Accounting	not identified	89.4	(17/19)

represent the status quo. She supports this position by stating that eighty percent of the MIS budget of corporate organizations in the United States is spent on mainframe computers while twenty percent is alloted to personal computers. In fact, personal computers are used more than mainframe computers. Eighty percent of user activity is performed on personal computers, and only twenty percent on mainframe computers. Furthermore, while mainframes are slow and inflexible, personal computers are nimble, flexible and can reduce the cost of computing (Currid, 1991).

The relatively recent growth of computer networks within the various organizations may possibly explain the differences between the two studies. Mainframe computers may be used in the operations of local area networks, although microcomputers and minicomputers can serve this function as well. In Sheldon's study, the process of implementing networked computers was in its early stage of development. This study reveals that networked computers are becoming a popular information tool. A network is a system of electronic pathways that connects various communication devices. When this network is confined to a building or office complex, it is called a local-area network or LAN. Based primarily on the evolving use of microcomputers, LAN permits users to share expensive peripherals and software, and increases productivity through workgroup computing (Athey et al. 1989).

A further comparison was made between the two studies regarding computer software. Word processing programs are used by all of the respondents. Accounting, database management, graphics, and spreadsheet programs are also popular.

iii) Level Three: The Innovators

On the basis of the questionnaire, only five agencies were using computers in VICs as defined by the project. Within the classification scheme used to determine organization innovativeness, these five agencies comprise the innovator group. Before examining these five, introductory comments will be made regarding agencies that were excluded from this analysis.

The Northwest Territories responded that they are using computers in VICs as defined by this project. In this case, the agency was excluded from this case because this system is used to manage tourism inquiries made by mail or by telephone and not through direct interaction with the visitor. The Northwest Territories use a personal information manager to keep track of visitor inquiries, and administrative tasks.

> We respond to general and some specific request for information on the Northwest Territories. We presently utilize a computer system which is a copy of Tourism Saskatchewan's system, called T.I.S. (Tourism Information System). It has not been without small problems over the past two years; however, we feel it has definitely been worthwhile to have persevered (Scott, Pers. Comm., 1990).

Similar systems are currently used by other agencies responding to this questionnaire (Vancouver Tourism, and Calgary Tourism and Convention Centre), although this survey did not specifically address information products strictly used for marketing purposes.

As previously stated, the data collected through the questionnaire was solely used in the grouping of agencies regarding organization innovativeness. Upon examining secondary sources, discrepancies were uncovered between the questionnaire response and that found in the annual report. In addition to the case of the Greater Montreal Tourism and Convention Bureau, discrepancies between primary and secondary data sources were found concerning the Metropolitan Toronto and Convention and Visitor Association (MTCVA). Although the respondent representing MTCVA did not state that this agency was implementing a computer system for visitor centres, this comment was found in the 1989 annual report issued by this agency: "Looking Ahead: Implementing a 5-year plan to fully automate the information and statistics base for use by Customer Services staff". Where possible secondary sources were used to substantiate the questionnaire responses. The annual reports issued by other agencies responding to this questionnaire did not suggest similar discrepancies. The following section briefly discusses the computer systems used by the agencies classified as the innovators. A breakdown of the hardware/software, purpose, access, funding and general comments of the innovators is presented in Table 4.4.

a) Nova Scotia Department of Tourism and Culture

The system used by Nova Scotia has been adapted over time to meet the changing organization structure and needs, and

Table 4.4
Computers Used in Visitor Information Centres

Agency	Hardware & Software	Main Purpose	Access	Funding	Comments
CPS Western Region	Stand Alone IBM Commercial Products	Travel Info Safety Road & Trail Reports	Staff	Agency	CPS planning to expand computer use in VICs
P.E.I. Tourism	Stand Alone IBM Laser Printer Commercial Products	Reservations Statistics	Staff	Agency	Limited storage space Complex system to use.
Nova Scotia Tourism	Hewlett-Parkard Mainframe linked to terminals in VICs Commercial Products	Reservation management	Check Inns	Private and Public	Widely used system. Expansion to other Atlantic areas
Manitoba Tourism	Stand Alone IBM Videodisc Touch Screens Modified Commercial Products	Travel Info	Staff and Public	Fed/ Prov Funding	Funding concerns Expansion of system in process
Vancouver Tourism	Networked IBM PC Commercial Products	Reservations & Stats	Staff	Membership Fees	High purchase cost

advances in technology. Nova Scotia is presently using a system called Check-Inns in selected VICs. Computer terminals in information centres operated by Nova Scotia Tourism are linked to a Hewlett-Parkard mainframe. The chief purpose of the system is to manage accommodation reservations. This system was developed by a private agency, Check-Inns, although the Department of Tourism subsidized both the capital and operational costs of the system. The Check Inns organization is responsible for up-dating on-line information for Nova Scotia Tourism. No other government agency has access to this data base nor can visitors directly access on-line information.

This is the first attempt by Nova Scotia to use computers in VICs. This system was viewed by the respondent as reliable and flexible and at the same time the system provided adequate storage space. Initially, limited user friendliness was considered to be its chief shortcoming, although the staff enjoyed using the system after they became accustomed to the system.

b) Canadian Parks Service, Western Region

The Canadian Parks Services (CPS) is divided into five regions. The structure of CPS is such that each park is fairly autonomous in the implementation of computers. Although each region coordinates the efforts of the parks, parks managers may initiate special projects. To gain a complete picture of the use of computers in the visitor centres operated by CPS, it would be necessary to contact each park. This was not done due time and financial limitiations.

As a division of Environment Canada, CPS has access to its communication network based in Hull. In 1987, Environment Canada implemented the Departmental Office Technology System (DOTS). This system is a computer communication network that allows "thousands of users across the country to share and communicate information" (Environment Canada, 1988-1989 p 20). Centred in Hull, the network had over 3,000 users at over 80 locations. Users can prepare documents, prepare budgets, develop schedules, send messages, share information or jointly work on projects and retrieve information stored on internal and external computer systems.

Although questionnaires were sent to each of the five national park regional offices, only the Western Region is involved in a comprehensive project involving the implementation of computers in VICs. Stand alone computers are used by CPS staff members to provide accommodation, attraction/events, travel/transportation, and leisure opportunities information. In addition, safety concerns, and road and trail reports are available to the staff. This information is then communicated to the public verbally or through computer print-outs. The CPS is responsible for the capital and operational costs of the systems whereas CPS Western Region is responsible for the upkeep and updating of the system.

Pilot projects are currently underway in various parks within this Region. Park Staff in Kootenay National Park are experimenting with interactive video technology for park interpretation purposes. Dave Huddlestone of CPS Headquarters remarked ". . . the public appears to enjoy the video system, this project has been plagued with problems".

c) Visitor Services, Development Division, Prince Edward Island Tourism and Park

Stand alone IBM PC compatible computers are used in VICs in Prince Edward Island. These computers are used to collect visitor statistics and manage reservations. They are also used to complete the correspondence and administrative work of the VICs. Access to the system is limited to tourism staff. All computerized information is verbally communicated to the visitor by support staff. Information can also be printed but this is not presently being done. The materials most commonly requested by visitors involve accommodation, reservation and attraction/event information. This tourism agency is responsible for the maintenance of the system, and information is updated by the tourism personnel via printed material which is then entered into the system.

The Department of Tourism assumes the capital and operational cost of the system. Private agencies are not involved in this project nor are other government agencies. Problems associated with limited storage space and inflexibility of the system are acknowledged. Other problems involved in the use of computers include staff willingness to use the system and limited user-friendliness. The system is perceived to be reliable and purchase and operational costs are considered reasonable. Although the respondent feels that the system has its share of problems, it is acknowledged that it is worthwhile placing computers in VICs.

d) Tourism Vancouver, Travel Infocentre

Tourism Vancouver is not a government agency. The respondent inferred that all funding is generated through membership dues and private sources. Upon examining the annual report of Tourism Vancouver, it was ascertained that approximately 16 percent of the budget was composed of government funding (Federal, Provincial, and Municipal). Sixty three percent of the operational budget was funded through a levied room tax.

The system used by Tourism Vancouver consists of networked IBM PC compatible computers. Commercial database programs were used to manage tourism information. The system was designed to assist in reservation management. Reservation agents, managers and market research department have access to the system, but visitors do not have direct access to the computers. Tourism Vancouver is responsible for the upkeep and updating of the database. This agency is very satisfied with this system as it provides a high degree of flexibility. The system is considered user friendly and the staff enjoy using it. However, the respondent noted problems associated with the reliability, storage capacity and operational costs of the system. The purchase cost of the system was considered to be quite high. Tourism Vancouver commented that computers in VICs was a worthwhile endeavour.

e) Travel Manitoba Customer Service

Travel Manitoba was the only agency which responded to the questionnaire that had had previous experience with computers in VICs. Travel Manitoba's Electronic Laser Videodisc Information Service (ELVIS) is an interactive video system. This system includes stand alone IBM PC compatible computers, and ten video display terminals with colour touch-screen monitors. Six selected VICs in the province currently use this technology. Software packages were developed by members of Travel Manitoba using commercial products. The program used in VICs is called "Level III Interactive Video Presentation". Visitors can directly access information stored in the system using a touch screen interface. Leisure opportunities, attractions/events, accommodation, reservation and travel/transportation information are available to the visitor. Metric and money conversion is also available. Travel Manitoba is responsible for the upkeep of the system. Updated information is communicated using diskettes and printed material. Other government agencies do not have access to this data.

Funding for this project was made possible by the Canada/Manitoba Tourism agreement (1985-1990). Private agencies pay a fee to be included in the various modules of the interactive system. The capital costs of the system are considered to be unreasonable. Problems associated with the operational costs and reliability of the system are acknowledged. Storage space is viewed as adequate. Staff and visitors enjoy using this flexible system.

Videotex system using terminals linked to a mainframe were used in the past. This system was not considered satisfactory due to problems associated with the reliability and flexibility of the system. Problems associated with purchase and operational costs, storage capacity, staff satisfaction with the system were also reported. Travel Manitoba is no longer using this system for a number of reasons. These included the availability of improved technology, the staff did not want to use the system, the cost of the system, and the system did not fulfil the needs of Travel Manitoba. The agency did not consider this system worth all the associated costs and problems.

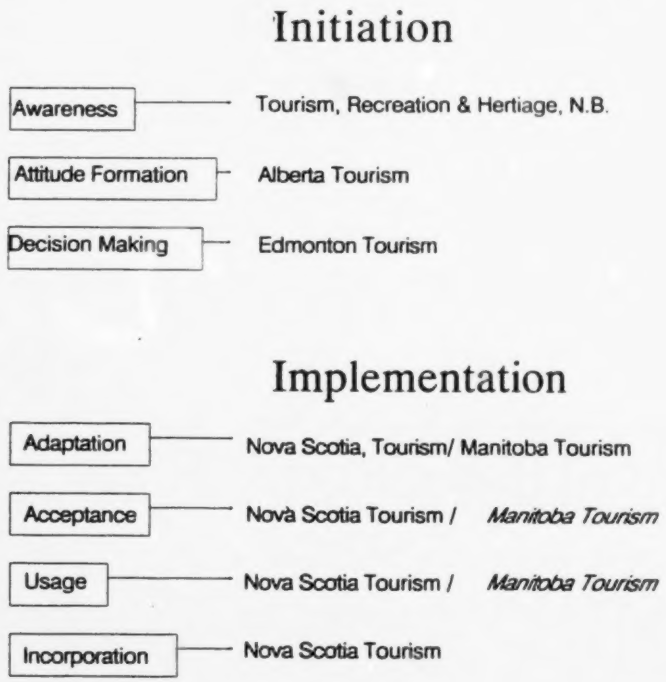
D. Adoption of Innovation: The Continuum

In Chapter 2, reference was made to adoption of innovation continuum. In Table 3. 4, the criteria used to categorize agencies along this continuum can be found. Due to insufficient data, only five agencies are used to illustrate the adoption of innovation continuum. The adoption of innovation continuum is presented in Figure 4.2.

i) Awareness

The first level of the adoption of innovation continuum

Figure 4.2 Adoption of Innovation Continuum


Initiation
Awareness
Tourism, Recreation & Hertiage, N.B.
Attitude Formation
Alberta Tourism
Decision Making
Edmonton Tourism
Implementation
Adaptation
Nova Scotia, Tourism/ Manitoba Tourism
Acceptance
Novà Scotia Tourism / *Manitoba Tourism*
Usage
Nova Scotia Tourism / *Manitoba Tourism*
Incorporation
Nova Scotia Tourism

is awareness. This refers to the awareness of technology and how this technology can be used within the organization to meet its objectives. Issues of awareness were difficult to determine due to the nature of the questionnaire and organizational structure of the agencies contacted. While developing this questionnaire, it became clear that asking questions regarding technical knowledge of computer systems likely intimidated some respondents. In an early draft of the survey the respondents were asked to answer technical questions regarding computer technology and its application within the agency. This approach, as pointed out by a reviewer, may not provide information regarding the organizations use of technology, but rather the respondents' understanding of these matters. Furthermore, the questionnaire was sent to the Director of Visitor Centres. This individual may not be required to have a strong understanding of computer technology in order to fulfil his/her job description. An example of this was illustrated by two of the completed questionnaires. The respondents were asked to specify the computer technology their agency could be using in the future. The respondent were asked to answer either 'Yes' or 'No' to a list of hardware alternatives. Respondents representing Canadian Parks Service (Ontario Region) and Vancouver Tourism placed question marks beside videodisc and mini computer respectively. This response could be interpreted as a means of displaying lack of understanding regarding computer hardware.

Many agencies have distinct sections (client services) which are responsible for all computer systems used by the particular agency. Awareness of computer trends, as they apply to information services, may be of greater concern to these individuals than those who operate VICs.

Tourism, Recreation and Heritage, New Brunswick is currently in the awareness stage of the adoption of innovation continuum. The following comments were affixed to the completed questionnaire.

> As you can see, we have a long way to go to catch up with technology. I, therefore hope that by contributing to your project, we will have an opportunity to view the results. (Theriault, Pers. Comm., 1990)

This comment also suggests that this agency is entering the next stage of the adoption continuum: Information Gathering.

ii) Information Gathering

At the information gathering stage agencies actively seeks information regarding the innovation. This includes reassessing the direction and goals of the agency, determining the options available in the marketplace, the costs and benefits associated with each option, understanding technological trends and how these trends may influence the operations of the organization and how these options can be used by the agency. This is information which is commonly collected through a variety of means including research projects conducted within the agency and those conducted by consultants outside the agency. An agency which is currently involved in this stage of the adoption of innovation continuum is Tourism Alberta. This research project was partly funded by Tourism Alberta.

Tourism Alberta wanted to acquire information regarding the trends of computer usage in VICs. One issue that was uncovered by Tourism Alberta through other research projects was the importance of interconnectiveness among computer systems in the future. Compatibility of computer hardware and database structures are key considerations in designing computer systems to meet the present needs of the agency and future considerations of interconnectiveness. This project has provided an exploratory examination at how other government agencies are addressing the issues facing the use of computers in VICs. Other projects supported by Alberta Tourism are currently in progress to gather additional information regarding the role of visitor information centre vis a vis private and public tourism associations and cost and benefits associated with the use of computers in information service operated by Tourism Alberta. The information gathered from these projects and the political and economic realities facing Alberta Tourism will be evaluated by the agency in order to make a decision regarding future projects including computers in VICs.

iii) Decision Making

The decision making stage of the continuum involves the evaluation of the information gathered in the previous stage with respect to the goals of the organization. In doing so, a decision is eventually made regarding the implementation of the innovation. From the data collected Edmonton Tourism illustrates the characteristics of an agency which has entered the decision making stage of the adoption of innovation continnum. Edmonton Tourism represents an agency which has recognized the potential benefits of computerization, gathered information regarding computerization, and a decision has been made regarding the use computer in VICs. However, due to organizational priorities computers in VICs have not been implemented. The importance of organizational priorities was demonstrated by Edmonton Tourism. The questionnaire return from the agency included the following comment regarding organizational priorities:

> In 1985, we had a computer needs assessment study completed and identified the need for computers in the VICs . . . administration office is a priority for computerization - VICs are last . . . The budget (as approved by local city counsel), does not allow for it (the computerization of VICs) at this time, although we feel it's necessary (Baros, Pers. Comm., 1990).

The computer needs assessment study provided the information regarding the potential use of computers by this agency and suggested a priority list which was accepted with changes by the management of Tourism Edmonton. A computer system developed by a Calgary firm was examined for use in VICS. The cost for leasing the system for a year was estimated to be approximately twenty thousand dollars (Baros, Pers. Comm.,1989). As the computerization of VICs was not a high priority, the system was not implemented. A similar process was undertaken by Travel Manitoba, and the Department of Tourism and Culture, Nova Scotia but these agencies chose to implement computers in VICs.

iv) Implementation

Once the decision has been made to introduce an innovation in an organization, technical considerations, such as product design and set up and organizational concerns, such as staff training must be explored. Although five of the responding agencies are currently using computers in VICs, only Travel Manitoba and the Department of Tourism and Culture, Nova Scotia are discussed in this section due to availability of information. Unsuccessful attempts were made to gather information from the other agencies regarding the implementation process of their computer. Nevertheless, Travel Manitoba and the Department of Tourism and Culture, Nova Scotia illustrate two very different approaches to the development of their respective systems. The adoption of innovation continuum subdivides the implementation phase of the continuum into adaption, acceptance and usage/incorporation. Table 4.5 compares Nova Scotia and Manitoba in terms of this continuum.

Table 4.5
Adoption of Innovation Continuum
Implementation Phase

Adaption: Includes the development of training programs for staff, and formal evaluation of the computer system.

Acceptance: Includes upgrading and additions to the system and long term funding of the program.

Usage/Incorporation: Widespread use of computer system throughout the VIC network. The computer system is considered a standard tool in the operations of VICs.

Stage	Nova Scotia	Manitoba
Adaption	Yes	Yes
Acceptance	Yes	Incomplete (Funding Issues)
Usage/ Incorporation	Yes	Incomplete (Widespread but the system is considered a useful luxury)

a) Department of Tourism and Culture, Nova Scotia

The Check Inns system used in Nova Scotia was initially introduced in 1978. The system has been modified to suit the changing needs of Nova Scotia's tourism industry and updated to take advantage of developments in computer technology. The number of listings of accommodation properties listed on the system has been increased to include properties in Nova Scotia, Prince Edward Island, New Brunswick and Newfoundland.

The development of this system has a long history and had to overcome a number of obstacles during its implementation. In the fiscal year, 1978-1979 the Marketing and Promotion Division of Nova Scotia Tourism introduced Check Inns, a toll-free computerized reservation system. "Nova Scotia is the first province in Canada to have such a system and other Atlantic and Western provinces are monitoring its success with an eye to setting up a similar system" (Nova Scotia, Department of Tourism, 1978-1979, p.28-29). Check Inns was a Crown Corporation prior to 1979-1980 when the Tourism Industry Association of Nova Scotia assumed all management responsibilities of this agency. At this time all reservations were made by telephone. During the 1980-1981 fiscal year the toll-free line was expanded to include a national Wats line. Check-Inns service was expanded to include a number of properties in Newfoundland, Prince Edward Island, New Brunswick and Maine. During this first year the system was initially used for statistics and visitor tracking studies.

The relationship between public and private tourism agencies was discussed in the Provincial Tourism Master Plan of 1984. At that time, the Check Inn agency was in severe financial difficulties. Private tourism operators were not supporting this service. The fees charged by Check Inns to the private operator were considered high, while the quality of information and the benefits associated with registrating were questionable. The Provincial Tourism Master Plan clearly stated the role the Department of Tourism would play regarding tourism development in the province and by doing so ultimately defined its relationship with the Check Inns organization.

> The previous initiatives involve a combination of proposed government programs and self-help measures for industry. These measures promise to be effective but only if the private sector takes the lead. Ultimately the responsibility of building a more profitable tourism sector rests with the operators themselves. The statement continues by defining the role of government in the Nova Scotia tourism industry. The government, through the Department of Tourism, is committed to undertaking a stronger coordinating role with industry. Government/business relations should be viewed as a continuous process. Closer contact between the Department, the TIANS executive and the Voluntary Planning Board is essential" (Tourism Nova Scotia, 1984 p. 12).

The productive and mutually beneficial relationship among Check Inns, government and the private tourism industry took a number of years to develop. Small operators, with limited marketing budgets, questioned the usefulness of this system. Large operators, with larger marketing budgets, felt they were paying more than their 'fair' share for a listing on the system, and like the smaller operators questioned the economic impact of this service on their businesses (Check Inns, n.d.). An aggressive marketing plan primarily based on reservation statistics collected by the system, subsequently has demonstrated the importance of a listing on this system to a number of operators.

The relationship between Check Inns and the Department of Tourism was poorly defined after it was taken over by the Tourism Industry Association of Nova Scotia. This ambiguity was partly due to the overlap of duties and functions of Check Inns and the Department. The Travel Information Division of the Department of Tourism was responsible for "advising visitors of what there is to see and do in the immediate region and throughout the province" (Nova Scotia, Department of Tourism, 1985, p 21). Similar tasks were performed by the Check Inns system. Eventually, the system complemented the duties of the Travel Information Division. Check Inns is presently responsible for the updating of the database. Operators pay a fee to be listed on the system. Nova Scotia Tourism pays a yearly fee to Check Inns for the use of this system. All technical issues related to the operations of this system are the responsibility of Check Inns

In 1990, the Check Inns system was a computerized reservation and travel information system which represented more than 450 hotels, motels, campgrounds, bed and breakfast properties and car rental agencies in Nova Scotia, New Brunswick, Prince Edward Island and Newfoundland. Reservations can be made via a toll free number or in person at the Nova Scotia Tourist Information Centres at Amherst, Antigonish, Halifax, and Yarmouth.

b) Travel Manitoba

The Nova Scotia example demonstrates the importance of public and private tourism organizations cooperating to meet the information needs of visitors and tourism professionals. Travel Manitoba is also in the process of defining its relationship with tourism operators in Manitoba. In contrast to the situation in Nova Scotia, where private operators were chiefly responsible for the development and implementation of the computer system used in VICs, Travel Manitoba has taken a leadership role in Manitoba. Priorities set by Travel Manitoba with regards to the development of market expansion ensured the funding of the capital costs of the project through the Canada-Manitoba Tourism Development Agreement of 1985-1990.

In 1984 Travel Manitoba initiated a travel information system which utilized computer technology. The adaption phase of the adoption continuum took place during 1984 to early 1986. Staff training and evaluation of the system was undertaken at this time. The system was considered to be experimental. An extensive information gathering process was initiated prior to the development and after the implementation. "In developing our system, we did social surveys, questionnaires and interviewed visitors as to how they perceived computers systems in Info Centres" (Gaunt, Pers. Comm., 1990)

Upgrading and expansion of the network, which characterizes the acceptance stage of the implementation phase, were initiated in 1986 when this project received the support of the Canada-Manitoba Tourism Agreement. Based on the information gathered from the 1984 project, the Electronic Laser Videodisc Information System (ELVIS) was developed.

> Utilizing computer graphics, audio/video from videodiscs and a touch sensitive colour video screen, ELVIS allows a visitor to Manitoba to view short vignettes and individual video images of provincial parks and attractions, combined with textual and graphical information (Travel Manitoba, 1989, p.2).

The vignettes display a number of interest points in Manitoba. Tourism operators paid an inital fee to Travel Manitoba for their properties to be featured in the vignette.

In 1988, the Electronic Automated Reservation System (EARS) was incorporated into the Travel Manitoba information system. Using touch screen technology, visitors can view twenty two properties and connect with the reservation desk of the selected property, free of charge. Visitor acceptance was high, and many felt that they would like to see more properties on the system. As a result Travel Manitoba has been recruiting new properties to be included in the EARS network.

Although Travel Manitoba is expanding the ELVIS/EARS system funding is a major concern. The 1985-1990 Canada-Manitoba Development Agreement paid for the capital costs of the system. Establishing permanent funding for the operational costs of this system is perceived to be a major obstacle facing this system. (See section regarding Barriers to Computer Use in Chapter Five). This computer system is moving towards a similar status as its counterpart in Nova Scotia. The response to the questionnaire indicated that although this system was considered a pilot project, staff and tourist feel it is a "valuable tool" Unlike the Nova Scotia example, this system has not become a standard tool in the operation of visitor centres, but is still perceived by management as a "useful luxury".

E. The Adoption of Innovation Continuum and Organizational Innovativeness

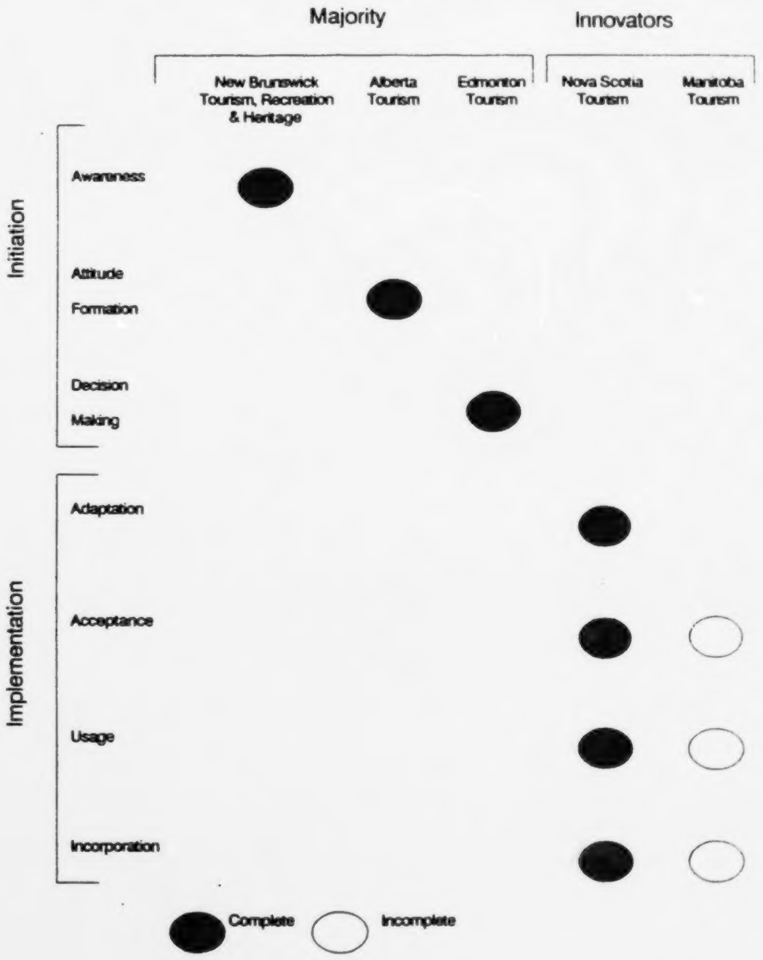
As previously stated, the agencies used to demonstrate the adoption of innovation continuum were selected due to the availability of information. The remaining responding agencies are assumed to be at various stages along this continuum, but additional information is required to accurately determined at which stage. This continnum has been present in a linear or sequential fashion, which implies that an agency must move from one stage to another in the order present above. Damanpour (1987) and Leonard-Barton (1987) suggested this linear arrangement of the stages may not represent the adoption process for all organization involved in the innovation implementation. The duration an agency will spend in any one stage will vary among the agencies. This study did not look at the time interval any one agency spent in any one stage, although after examining the results of the questionnaire and the secondary sources this may may be useful to understand the continuum of adoption more clearly.

Although a more complete understanding to the adoption of innovation continnum is necessary, there appears to be a relationship between organizational innovativeness and the adoption of innovation continnum. That is to say, as organizations become more innovative, it progresses along the adoption of innovation continuum. Although this may appear obvious, this relationship reveals that situations and issues that the organization will have to encounter due to the introduction of an innovation to the workplace. This knowledge will permit both managers and staff members to deal more effectively with the innovation. Figure 4.3 illustrates this relationship. The laggards were excluded from this figure as they were defined as those agencies that are not using computers for any purpose. As this study looks at the use of computers within agencies that operate VICs, these agencies are outside the scope of this study, and cannot be placed on the adoption of innovation continnum.

F. Summary

Descriptive information regarding the use of computers in agencies which operate VICs was discussed in this chapter. General use of computers by the responding agencies was compared to a similar study performed by Sheldon (1987). The organizational innovativeness was also examined. The responding agencies were classified according to their use of computers. Three agencies were defined as laggards. These are agencies that are not using computers. Fourteen agencies were grouped in the majority classification. The majority grouping consists of agencies which are using computers within the agenies, but not in VICs. Five agencies were classed as innovators. These agencies are using computers within their organizations and in VICs. A description of the systems used by the innovators was also presented in this chapter. Selected agencies were placed on the adoption of innovation continuum. The adoption of innovation continuum consists of

Figure 4.3
The Relationship between Adoption of Innovation Continuum and Organizational Innovativeness


Majority
Innovators
New Brunswick Tourism, Recreation & Heritage
Alberta Tourism
Edmonton Tourism
Nova Scotia Tourism
Manitoba Tourism
Initiation
Awareness
Attitude Formation
Decision Making
Implementation
Adaptation
Acceptance
Usage
Incorporation
Complete
Incomplete

the awareness, attitude formation, decision making, adaptation, acceptance, and usage/incorporation stages. Finally, a connection between organizational innovativeness and the adoption of innovation continuum was made. Further links between organization innovativeness and the adoption of innovation continuum will be made in the following chapter. This chapter will present information regarding the factors which influence the adoption of innovation process.

V. FACTORS INFLUENCING THE ADOPTION OF INNOVATION

A. Introduction

In the previous chapter, descriptive information was presented regarding the use of computers in VICs as an example of the adoption of innovation process. In this chapter the factors influencing the adoption of innovation, as stated in the fifth and sixth subproblems outlined in Chapter One, will be discussed. These subproblems were to determine the factors which affect the adoption of innovation process and to identify future trends in computer use in visitor information centres. The factors used to examine innovativeness and the adoption of innovation are described under three major headings: 1) Organizational Factors, 2) Attributes of Technology and 3) Human Factors. Additional factors, described by the respondents which influence the use of computers in VICs, future hardware requirements and future trends in the computerization of VICs are also examined.

Statistical analysis of the information gathered through the questionaire was problematic. Due to both the relatively low response rate and the response pattern, quantitative analysis was not an appropriate method of examining the data generated through the questionnaire. For example, only four questionnaires were usable from each provincial park agency and the Canadian Parks Service. Furthermore, information regarding the organizational structures of park agencies was not available to the researcher. As a result, park agencies were excluded from the analysis of organizational factors. As this research study is exploratory in nature, an case study approach was used primarily to examine the factors which influence the adoption of innovation in VICs. Anova was also used to evaluate these factors. The variance within the three groups, the laggards, the majority and the innovators was high. The validity of the results derived from Anova are questionable as the assumptions associated with this statistical test were relaxed in some cases. Further discussion of Anova is found in Appendix 1.

B. Organizational Factors

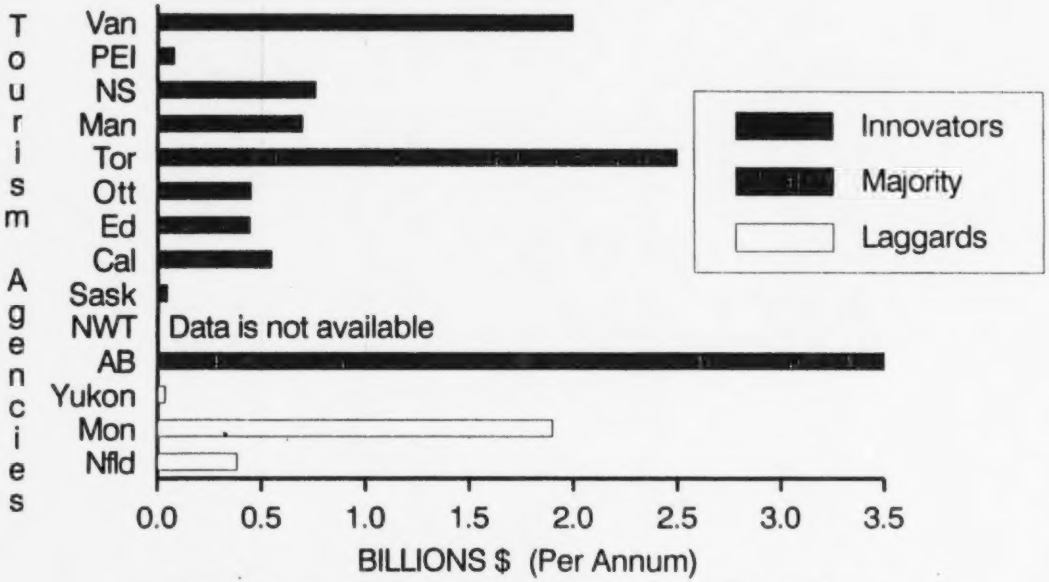
The Adoption of Innovation literature cites several factors which influence the adoption of innovation process (see Chapter 2). These factors include revenue, size of the organization, organizational slack (in this study determined by funding), functional differientation, and administrative intensity. Only tourism agencies were examined as parks agencies were excluded from this portion of the study due to insufficient information. Annual reports issued by tourism agencies and the statements of account produced by governments were used to examine the factors which influence the adoption of innovation. These tourism agencies were classified as the laggards, the majority, or the innovators as to their present usage of computers (see previous chapter) and then compared using the above factors. The following section provides an indepth examination of the organizational factors.

i) **Revenue** (see Figure 5.1)

Tourism is commonly viewed as a means to broaden the economic base of an area therefore revenue generation estimations are often used to support tourism development within an area (Tourism Canada, N.D. p. 32). Of the responding agencies, Alberta Tourism and the Metropolitan Toronto Convention and Visitor Association report tourism revenues to be in the 2.5 billion dollar range. Although the Ontario Ministry of Tourism and Recreation and the British Columbia Ministry of Tourism and Provincial Secretary were excluded from this study (see Chapter 3), they report the highest levels of tourism revenue in the country, 10.5 billion and 3.5 billion dollars respectively. The tourism revenue reported by Travel Saskatchewan is the lowest in the country at 45 million dollars. The variance among the three groups with respect to the revenue was wide. Revenue generated by each jurisdiction can be explained by a number of factors including aggressive marketing strategies, and hallmark events such as athletic, cultural or political events. The methods used to calculate tourism revenue differ from one jurisdiction to another, which partially accounts for the range of revenue reported and in turn affect the results of compawson among the laggards, majority and innovators. These methods include input-output approach, the economic base method, an adapted Keynesian income multipler model. Methods of estimating the economic impact of tourism are discussed in Chapter 28 of Travel, Tourism and Hospitality Research: A Handbook for

Figure 5.1 Organizational Factors

Tourism Generated Revenue



Revenue Generated through Tourism

(1989-1990)

Managers and Researchers by Ritchie and Goeldner, 1987. The methods used by the reporting agency to calculate tourism revenue were not available in the annual reports.

ii) **Funding** (see Figures 5.2 (a), (b), and (c).

Funding of tourism agencies was subdivided into three categories: a) total agency expenditures, b) budgets of subdivisions responsible for VICs, and c) budgets of VICs. It was difficult to collect information regarding funding of tourism agencies, and to make comparison among these agencies. This was due to the difference in organizational structure among these agencies. Commonly, the total agency expenditures are not solely earmarked for tourism activities. Rather, tourism is associated with recreation and culture, as is the case of Prince Edward Island, and Nova Scotia, or economic development such as is the situation in Manitoba, Saskatchewan, Yukon, and North West Territories. Therefore, it is difficult to ascertain the level of funding directly related for tourism unless it is clearly stated and then make the appropriate comparisons among the responding agencies.

For example, the budget of Alberta Tourism is 33.5 million dollars in 1988-1989 while the budget of Industry, Trade and Tourism in which Travel Manitoba was a division is 34.8 million dollars in 1988-1989. In the Travel Manitoba situation, resources including personnel and equipment (computers), are shared within other divisions within Industry, Trade and Tourism. Small tourism agencies, such as

Figure 5.2 (a) Organizational Factors

Funding - Expenditures of the Agency

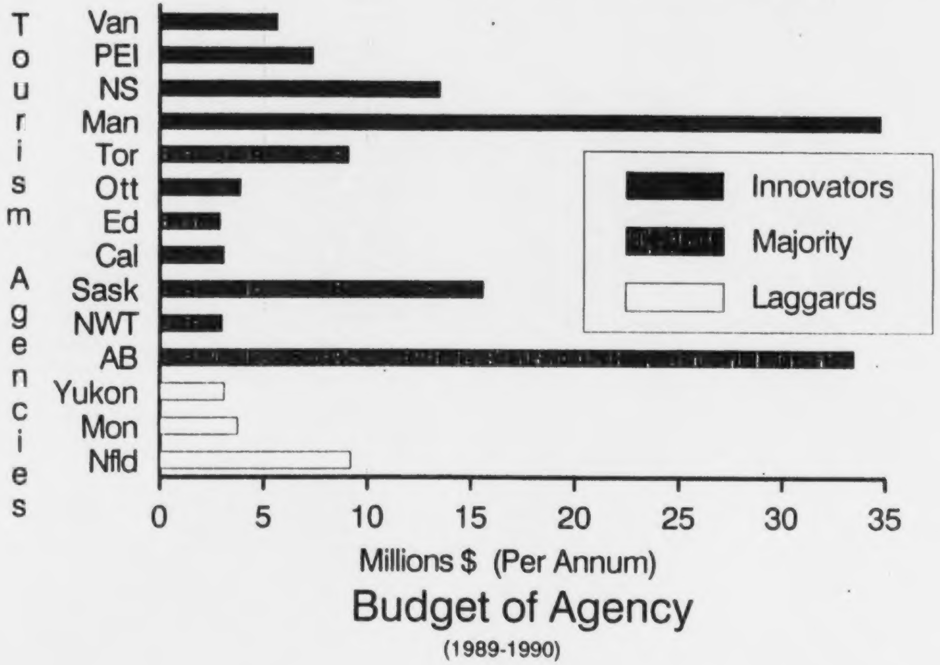


Figure 5.2 (b) Organizational Factors

Funding - Budget of Sudivisions Responsible for VICs

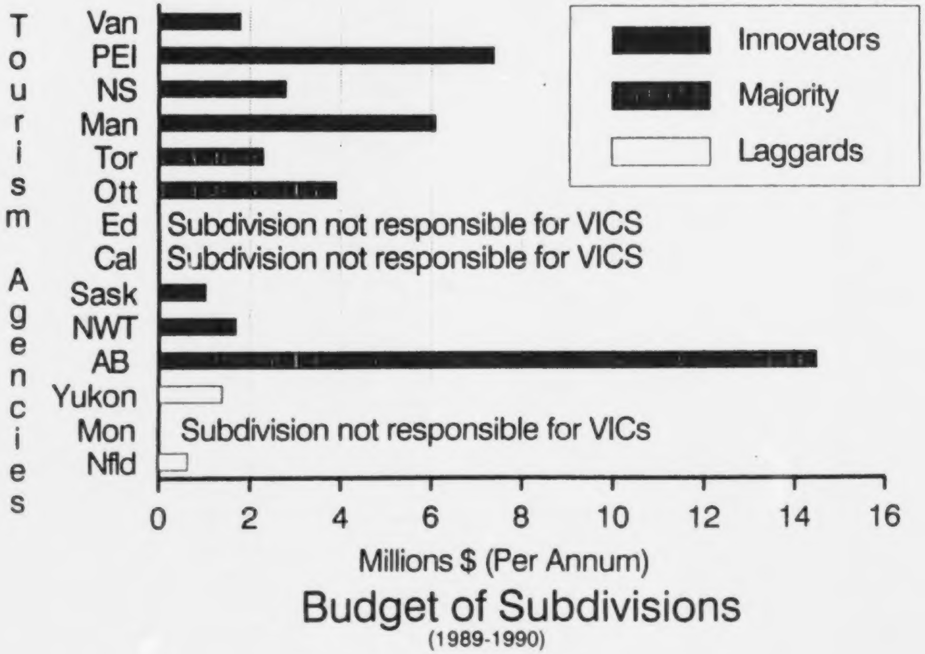
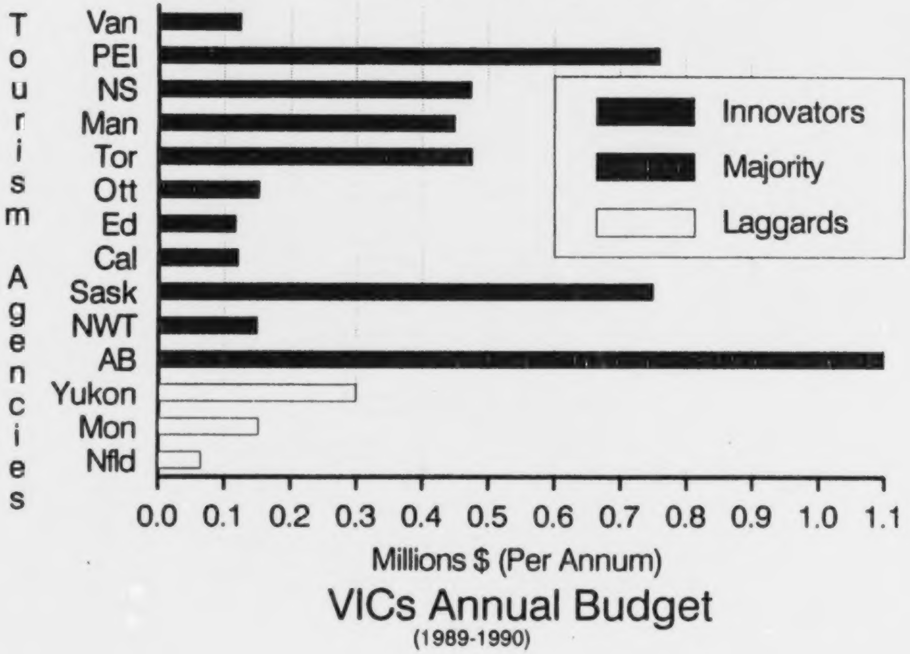


Figure 5.2 (c) Organizational Factors

Funding - Budgets of VICs



municipal tourist and convention centres, have flatter organizational structures. In the case of Calgary, Edmonton, and Montreal, there is no subdivision responsible for the VICs, rather funding is directly administered by visitor services. A complex hierarchical structure is evident by Alberta Tourism where the operation of VICs is administered by the Vacation Planning Branch, which in turn is a branch of the Marketing Division. These differences in organizational structure partially explains the high variance recorded.

As in the case of revenue generation, Alberta follows both Ontario and British Columbia in tourism expenditure in the country by government agencies. The Ontario Ministry of Tourism and Recreation spent 96.8 million dollars on Tourism Development Programs and Tourism and Recreation Operations in 1988-1989. In 1988-1989, the Ministry of Tourism in British Columbia spent 53.5 million dollars on tourism endeavours.

iii) Size (Figures 5.3 (a), (b), (c), and (d)

The factor of size was examined using the following criteria:

a) The number of employees in organization

b) The number of staff working in VICs

c) The number of VICs

d) The number of visitors using VICs

The agencies analyzed have either single, dual or multiple mandates. That is, the agency may be solely responsible for tourism (Alberta), shared responsibilities as

Figure 5.3 (a) Organizational Factors

SIZE - Number of Employees in the Organization

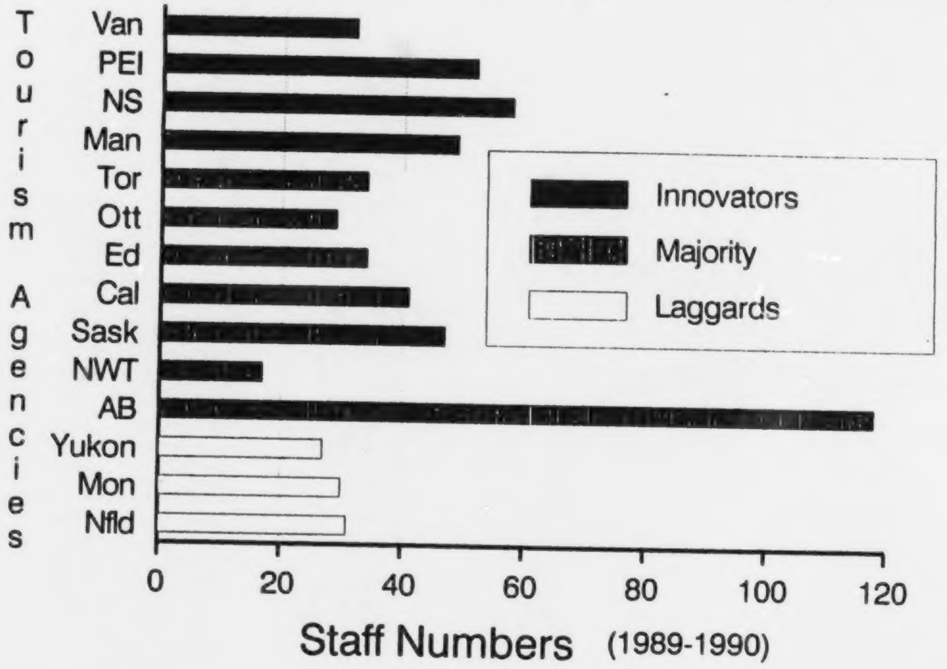


Figure 5.3 (b) Organizational Factors

Size - Staff Numbers (VICs)

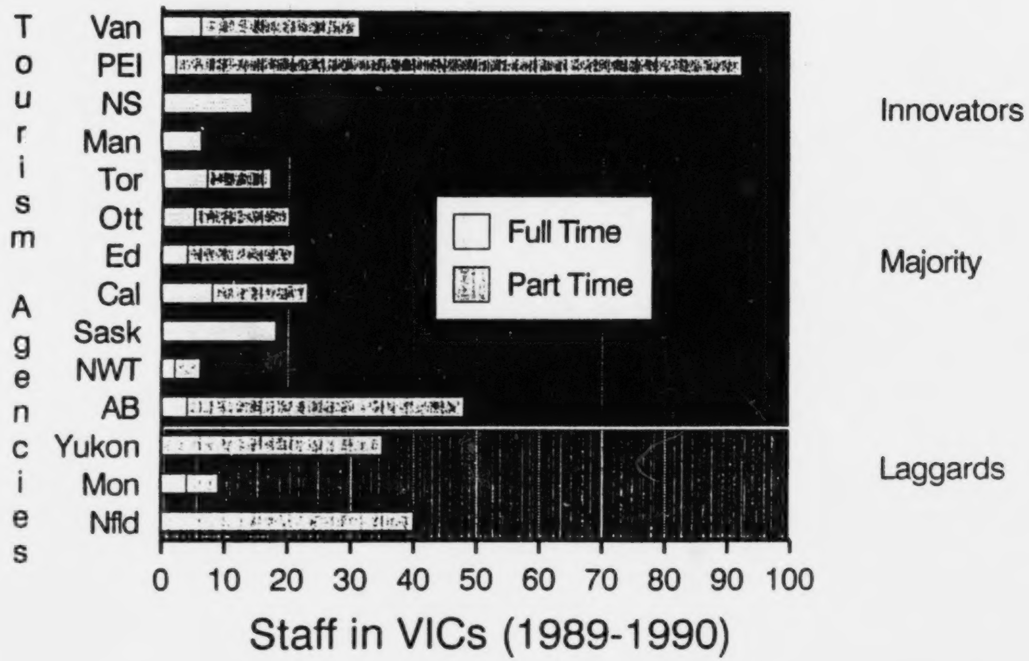


Figure 5.3 (c) Organizational Factors

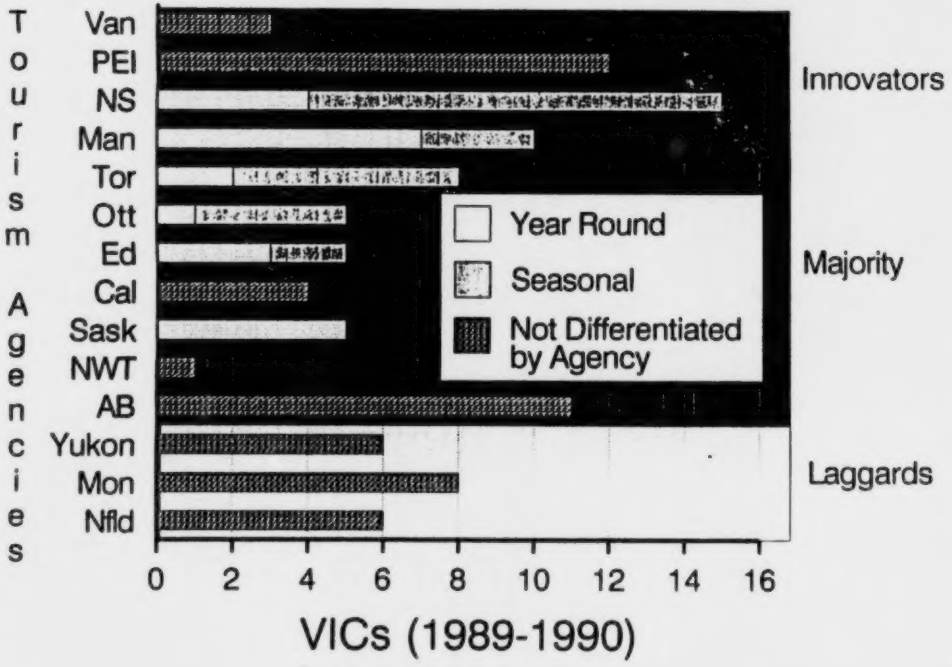
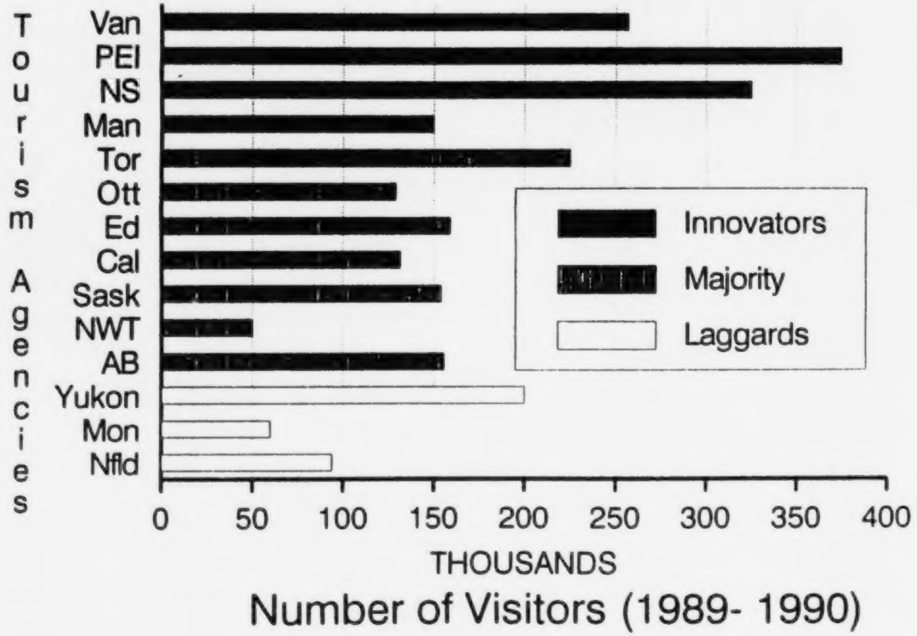

Size - Number of VICs

Figure 5.3 (d) Organizational Factors

Size - Number of Visitors Using VICs



in case of Ontario Ministry of Tourism and Recreation, or in New Brunswick's Department of Tourism, Recreation and Heritage, multiple duties. This, in turn, may influence staffing numbers which complicates the process of comparing agencies.

The number of staff members employed by the organization and seasonal and full time staff numbers are displayed together in Figure 5.3 (b). Similarly, VICs operated year round and on a seasonal bases are displayed in Figure 5.3 (c). In both cases, there were discrepancies between the information provided by the questionnaire and that found in annual reports. In these cases, the information provided by the respondents were used for this analysis.

In general, municipal tourism agencies employ 30 to 40 people while provincial agencies employ 40 to 55. Alberta Tourism employed 118 people in 1988-1989 making it the largest of all the tourism agencies in terms of number of employees. The smallest agency, employing only 17 people was Tourism Yukon.

This study did not formally examine the trends in organization structures of tourism and parks agencies, such as, whether tourism agencies were expanding or contracting in size. Alberta and British Columbia appear to be taking different approaches to organizational structure. Alberta Tourism grew from 118 full time employees in 1988-1989 to 188 in 1989-1990. British Columbia's Ministry of Tourism and Provincial Secretary reported a net decrease in full time employees for the years 1986 to 1989. In 1986-1987 this Ministry employed 406 people. After program changes and reorganization, there were 380 full-time-equivalent positions. The Ministry was again reorganized which further reduced its employees numbers to 249. The role the Ministry played in the operations of VICs or 'Infocentres' changed during this period. The Ministry provides technical knowledge regarding the operations of VICs while ownership and daily operations became the responsibility of the community.

Using Anova, there was found to be a significant difference in terms of visitor usage of VICs among the innovators, the majority and the laggards. Agencies which operate VICs where computers are used, report significantly more visitors using VICs than those agencies which are not using computers. An assumption of the Anova test is similarity of variance and as there was a wide variance with these categories, this finding must be looked at speculatively. Furthermore, this increase in usage of VICs can be explained by other related factors. Visitor inquiries may be more effectively and accurately recorded using computers than when done manually. The agencies using computers in VICs may place more effort in marketing the VICs. That is, the use of computer technology is prominently discussed in promotional materials, such as in the case of Travel Manitoba. In this situation, VICs are not only places which provide tourism information, but become tourism attractions themselves.

Figure 5.4 Organizational Factors

Functional Differentiation

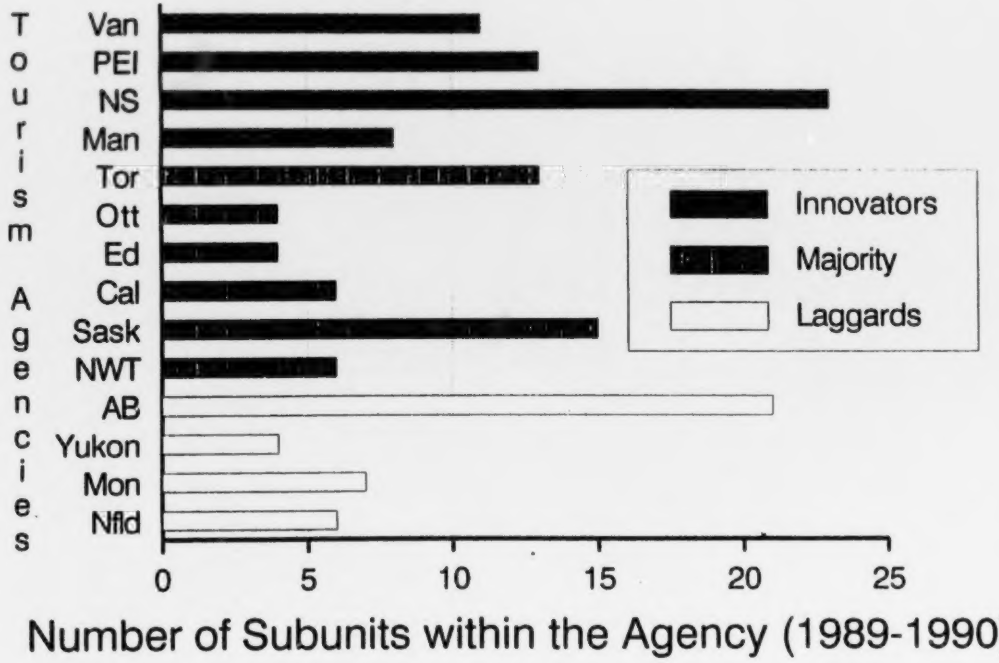
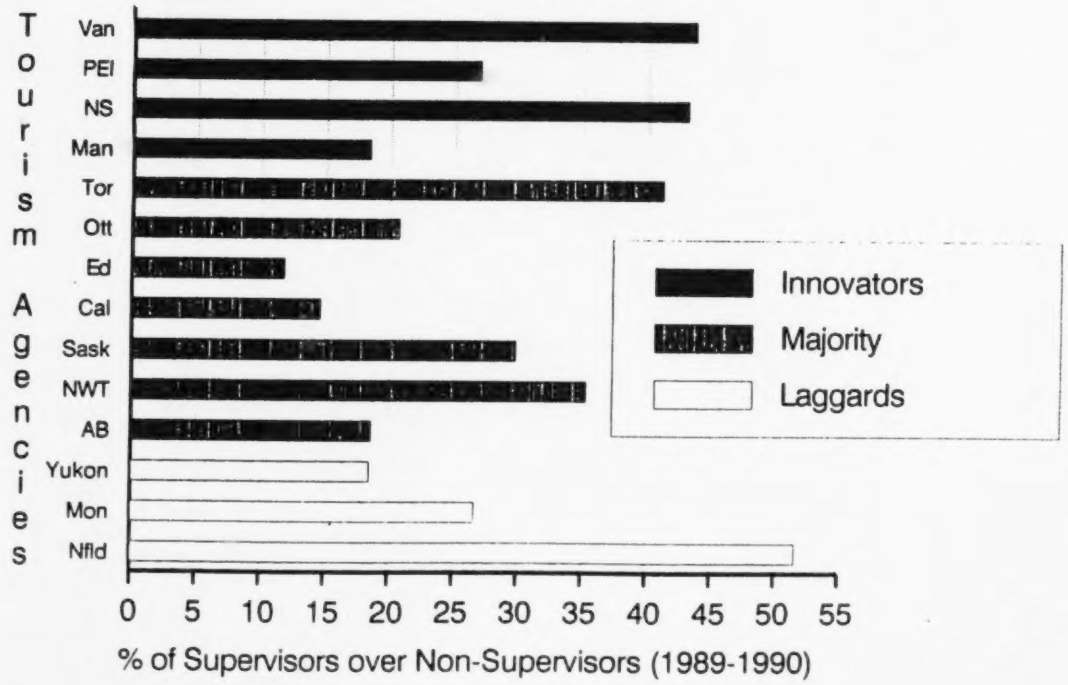


Figure 5.5 Organizational Factors

Administrative Intensity



iv) **Functional Differentiation** (Figure 5.4)

Functional Differentiation is the degree to which an organization is divided into subunits. The variances among the three groups, the laggards, the majority and the innovators were most similar when evaluated using functional differentiation. Alberta and Nova Scotia displayed the greatest degree of functional differentiation, while Ottawa and Edmonton displayed the lowest.

v) **Administrative Intensity** (Figure 5.5)

This is the percentage of supervisors compared to non-supervisory staff. Newfoundland, Vancouver and Toronto record the highest administrative intensity, while Edmonton, Calgary, and Manitoba displays the lowest.

C. Attributes of the Technology

The second factor used to examine the use of computers in VICs was related to the technology itself. These results were generated using the information from Section F of the questionnaire. This analysis includes both parks and tourism agencies. Issues associated with relative advantage, complexity, compatibility, and trialability were examined in this section. Cost of the system was also evaluated in this section. Cost is elastic, that is cost is a function of market factors and will vary as a result of these factors, therefore in the strictest sense it is not an attribute of technology. However, cost is the most commonly mentioned issue regarding the use of computers in VICs. Funding concerns will be discussed in more depth later in this chapter.

The responses to the Likert questions regarding attributes of computer technology used in VICs were analyzed using the microcomputer statistical package dBase Stats. Table 5.1 illustrates the results of this section. Figure 5.6 illustrates the results of the attributes of technology section of the questionnaire by organizational innovativeness groupings.

Both capital and operations costs associated with computer systems were seen to be high by all groups. This was supported by the comments written by the respondents.

The question relating to staff computer skills "Our staff have limited computer skills", elicited varied responses among the three groups. Laggards showed the strongest disagreement followed by the majority and the innovators. The majority and the innovators have experience in implementing computer system in the workplace and are aware of the skills involved in this process. The laggards have not had this experience. This response pattern suggest that the laggards are unaware of the skills involved in the implementation of computer systems. Ironically, all three groups recorded similar responses regarding the complexity of the computer system. The laggards slightly disagreed to the question "Computer systems are too complex" to a greater degree than either the majority or the innovators.

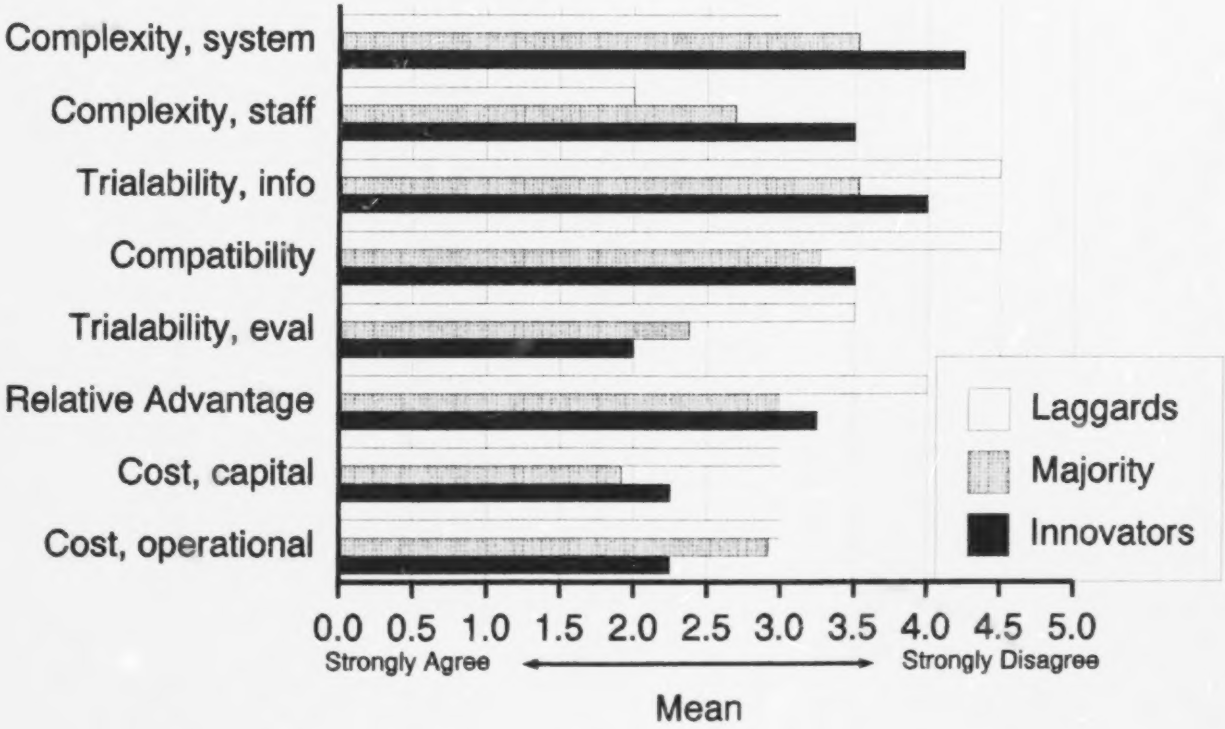
Table 5.1
Factors that Influence the Use of Computers in Visitor Information Centres

Attributes of Technology

Question	Innovators (4)	Majority (13)	Laggards (2)
Factor: Complexity Computer systems are too complex.	4.25	3.53	4
Factor: Complexity Our staff have limited computer skills.	3.50	2.69	3.5
Factor: Trialability It is difficult to obtain reliable information about computers.	4	3.53	4.5
Factor: Compatibility Computer systems are incompatible with our current operating procedures.	3.5	3.23	4.5
Factor: Trialability There is limited opportunity to evaluate computer systems used by other agencies in VICs	2	2.38	2
Factor: Cost The purchase cost of a computer system is too high.	2.25	1.92	3
Factor: Cost The operational cost of a computer system is too high.	2.25	2.92	3
Factor: Relative Advantage Computerization is not necessary to complete our department mandate.	3.50	3	3

NOTE: All values are rounded to the nearest hundred.
The Likert scale used for this question assumed that a 1 indicates strong agreement, while a 5 denotes a strong disagreement to the statement.

Figure 5.6
Attributes of Technology



All groups indicated that computers are compatible with their current operating procedures. The response patterns suggest that information about computer systems is readily available. This response differs from the written responses which indicated that product information was lacking. All three groups concurred that there are limited opportunities to evaluate computer systems operataed by other agencies. The innovators recorded slightly higher levels of disagreement relative to both the laggards and the majority regarding the following question associated with relative advantage: "Computerization is not necessary to complete our department mandate". Supplementary comments regarding attributes of technology were made by the respondents are discussed in the next section.

D. Additional Factors Influencing the Use of Computers in VICs

In addition to the Likert scale questions, written responses provided additional information regarding the barriers which limit or constrain the use of computers in VICs. These comments pertain to funding difficulties, computer capacity and limitations, and organizational and operational issues. Other issues identified through the survey were awareness and the need for improved information exchange. Tichy and Devanna (1990) identified three sources of resistance to change, technical, political and cultural. Applying this framework to the findings of this study, technical sources of resistance are key to understanding the barriers facing the use of computers in VICs

i) Costs and Funding

The cost of computers as an element affecting the use of computers in VICs was expressed both in the Likert questions and in the written portion of the barrier section of the questionnaire. The cost of equipment is a form of technical resistance to change. The cost of current operating procedures make additional cost, in this case the cost of computer technology, too expensive. New procedures must 'compete' with established ways of doing things for funding. As computers in VICs are a relatively new phenomenon, the benefits associated with the implementation of computers in VICs are not clear. This position is recognized by Manitoba Parks "Perceived benefits of computers does not justify cost at present."

Related to cost is the funding of projects. Funding is the most commonly cited factor impeding the implementation of computers in VICs. Funding, in part, is related to organizational priorities. As key resources are limited, all government organizations must evaluate which activities are central to fulfilling their mandate. Furthermore, organizations face inertia, where it is easier to continue to "do what has been done in the past than to learn new behaviours" (Ulrich, 1987, p. 205). Thus, computers were first introduced in areas where the fundamental operations of a duty or task would be relatively unchanged by their implementation. Administrative activities (including accommodation reservations, schedule management) performed by tourism and parks agencies were the first to be computerized (MacFarlene, 1987).

Computers threaten to change the fundamental operation of VICs by changing the way tasks are undertaken and the nature of the interpersonal relationships between staff and clients. Moreover, new programs may alter existing power structures within the organization producing what Tichy and Devanna (1990) refer to as a political resistance to change. Consequently, the introduction of computers in VICs is considered by some agencies as a low priority. A comment made by Edmonton Tourism illustrate this point:

> "We had a computer needs assessment study completed and identified the need for computers in VICs. The budget (as approved by local city council) does not allow for it at this time. Office administration is the priority for computerization - VICs are last. We feel it's necessary".

This situation is further complicated when the funding of public programs is decreased. Circumstances demand that new programs compete with older programs for limited resources. Often new initiatives are delayed or cut as a result. This is demonstrated by the following comment by BC Parks: "We have difficulty funding maintenance and replacement of static displays and no funding for a new computer system".

Even in those instances where a project receives approval, long term funding of a program is often uncertain. Funding costs may force agencies to re-evaluate the need for certain projects. Term funding for a project may be available through outside sources, but beyond that time period continued funding is questionable. This situation will affect the operational funding of a project. For example, the capital cost of the system developed by Travel Manitoba was funded under the Canada-Manitoba Tourism Development Agreement, (1985-1990). However, Rick Gaunt coordinator of this project comments: "Capital cost in many cases can be recovered in joint funding ventures with other levels of government. The crunch comes when capital money is spent and support funding must be found."

ii) Awareness/Information Exchange

Awareness is defined as "the extent to which a prospective user is aware of the existence of a product" (Hickling, 1988, p 35). Awareness defined in this manner does not appear to be a major concern of the responding agencies. However, awareness may also include an understanding of the range and variety of systems and their respective capabilities. In this case, awareness issues were related to a manager's limited knowledge of advancements in computer technology. New Brunswick's Department of Tourism, Recreation and Heritage provides such an example. The following were identified as three major concerns regarding computer technology by this agency. However, from a purely technical viewpoint these concerns need not to be obstacles to the implementation of computers in VICs.

1) The use of computers in seasonally operated VICs requires that they are set up in early May and removed in October. The respondent also commented on the possible problems of vandalism and maintenance of these computer in remote regions.
2) Training of causal staff at the centre, due to large turn-over of staff.
3) As the Province of New Brunswick is officially bilingual any system used in VICs in New Brunswick must have bilingual capacities.

Although these issues may limit or restrict the use of computers in VICs presently, they need not in the future as advancements in hardware design, such as increased durability and portability, and software will reduce the problems associated with the above mentioned concerns (Moore, 1991 p. 41). Increased sensitivity by programmers to the needs of the end users have reduced the training time required to operate information systems. Early translation programs were not satisfactory, but newer programs provide improved translation capacities. There are computer software packages available which provide language translation although they are not without fault (Benton, 1991).

Concerns regarding limited information pertaining to new products and how these products can be applied to VICs was expressed by the Calgary Tourist and Convention Bureau: ". . . the availability of software specific to VIC use and up-to-date information from miscellaneous sources is necessary, yet sadly missing." Software designed specifically for VICs is in demand but not presently on the market. Canadian Parks Service (Headquarters) supports this by suggesting that the "development of appropriate software to meet our needs" is a barrier to the use of computers in VICs.

The importance of staff involvement in the implementation of technology has been discussed by Damanpour (1988). Awareness of long term strategic planning as it pertains to the use of technology by an agency is lacking among some workers within the responding agencies. For example, the respondent representing the Metro Toronto Convention and Visitor Association did not indicate that computers are being implemented by this agency. Within the 1988-1989 Annual Report issued by this organization, comments were made involving the implementation of a fully automated information and statistics database for use by customer service staff. Tichy and Devanna (1990) suggest that new ideas must be presented to line workers, so that they understand how new technology will affect them and discuss their concerns with management. This factor is directly related to the issue of staff training. Staff training and promoting the use of computers by staff was raised by a number of agencies. A respondent representing the Canadian Parks Services concludes his long list of barriers by including " cost and training of staff, getting staff to use them and getting visitors to use them".

Furthermore, if computer technology is to be used in an organization, key members within the organization must be aware of the opportunities and problems associated with these systems. Moreover, these key individual must be aware of the trends facing the entire organization. Interconnection between agencies within the same government organization is typical as these agencies work on similar tasks. Linkages are formed to exchange information, expertise and strategies regarding common concerns. For example, organizational linkages between Travel Manitoba and Manitoba Parks is clearly lacking. Travel Manitoba has developed a highly advanced interactive video system which includes a module outlining outdoor leisure opportunities. On the other hand, Manitoba Parks is not utilizing this technology. The opportunity exists to develop a module to market Manitoba Parks yet the links between these two agencies must be established before this can take place.

Information exchanges must be present for such linkages to occur. Information is required by tourism and park organizations to assess the capabilities of computer technology. This requires the organization to allocate resources to research the possibilities. Some organizations do not have sufficient resources to conduct needs assessment studies. The lack of reliable, current, and accurate information regarding computer systems is the second most commonly stated factor as a barrier to the use of computers in VICs.

This need for information was also recognized in the Hickling Report (1988) which examined the application of technology in the tourism industry. The authors of this report suggest that Tourism Canada should provide information to tourism organizations regarding computer technology. The reports continues by describing a 'Technology Diffusion Registry' where interested parties could obtain information on technology and "who is purchasing what system with which features" (Hickling, 1988, p. 37). This registry would enable potential adopters to gain valuable technical and cost information in an inexpensive way.

E. Human Factors

In this section the issue involving the interaction of computers and people as it pertains to this study are discussed. Related to the issue of computers and human is the matter of organizational uncertainty which will also be discussed in this section.

i) Computers Versus People

As with other studies related to the adoption of innovation, including one conducted by the Economic Council of Canada (1987), concerns associated with the effects that computer technology has on the operation of the agency, in particular staff members, was expressed by those agencies responding to this questionnaire. Betcherman and McMullen (1986) discuss the possible displacement of workers due to automation in Canada. However, displacement of staff was not expressed as a issue by the respondents in this study. Rather, fundamental concerns involving the purpose and function computers have in VICs was voiced. In other words, the respondents question the utility of computers in all VICs: "We view them (computers) as, at times, desirable but not essential for most visitor centres" (Canadian Parks Service, Ontario Region, 1990). Moreover, comments suggest that these agencies concentrate on immediate concerns within a geographic area, rather than matters associated with the visitor information network. These sentiments were expressed by Alberta Recreation and Parks (1990):

> "Most information requested and dispensed is about the park or its immediate surroundings - staff at public contact points are trained and knowledgeable about that - You don't need a computer database to answer question like "How do I get to the boat launch?", "Is the fishing good?" or "Where is a good restaurant close to the park?"

The concerns regarding the function of computers within the agency, in this case in human services, was voiced by Canadian Parks Service (Headquarters):

> "A guiding principle we have is to keep face-to-face contact with visitors, to better respond to their particular needs. As flexible and as informative as a computer can be, it will never replace the human element".

In this situation computers are simply a tool to fulfill the agency's mandate. The respondent representing the Canadian Parks Service (Western Division) concurs:

> "Computerization enhances our ability to fulfil our mandate" but added: "I believe they are useful and have their place. However, they should not be over depended upon such as replace human interpreters or travel counsellors. In this respect, visitors prefer to communicate with live people and since a big part of our mandate is to service people, we should adhere to their requests where it is feasible."

ii) Uncertainty

Tourism and parks agencies, in keeping with other government agencies, must be sensitive to trends which influence their operations. The Goods and Services Tax, economic recession, and Gulf War are elements of uncertainty facing the tourism industry. The effects of the Goods and Services Tax (GST) on the tourism industry are only now being assessed (Wickens, 1991). Economic recession afflicted the Canadian economy in 1989-1991. The Persian Gulf War also adversely affected world wide tourism (Wickens, 1991). Government agencies have had to streamline their operations in order to fulfil their mandates in times of fiscal constraint. Both human and physical resources have been reduced. Funding for new programs, including computers in VICs, is scarce.

The problems resulting from organizational uncertainty are frequently compounded by rapid technological change. Technological developments are introduced to the market swiftly. A product can be introduced on the market as 'state of the art' technology and within a six month period become vitually obselete (Moore, 1991). With such rapid change, long term technological planning is very difficult. Consequently, managers must attempt to make decision involving computer technology which will have long term consequences in an ever changing environment.

iii) Product Champions

Although variables including revenue, funding, size, administrative intensity, functional differentiation have been linked with the adoption of innovation in other studies (Kimberly, 1987, Leonard-Barton, 1988), they did not appear to be linked to the use of computers in visitor information centres. One variable described by Kanter (1983) and Leonard-Barton (1988) which can be used to understand the implementation of computers in VICs is the factor of product champions. An innovation requires the sponsorship of someone in the organization who has the political influence and access to the necessary resources. This individual acts as an enthusiastic salesperson for the idea.

> ". . . champions guide innovations through the organizational decision-making process, and their presence is as important during the implementation phase as it was at the time of the initial adoption decision" (Leonard-Barton, 1988, p.615).

For example, the system developed by Travel Manitoba was primarily the responsibility of Rick Gaunt. Mr Gaunt was involved in the Department's early attempts with the Telidon system in 1984. Although there were major problems associated with this project, upper management realized the potential of an interactive database for information services. The 1985-1990 Canada/Manitoba Tourism Agreement provide the funding for the project. A proposal was written by Gaunt regarding an interactive computer system. This proposal was 'rather technical'. Although the initial proposal was rejected, a second proposal was written which described the potential of laser videodisc technology and how this technology could be utilized for tourism information applications. As a middlelevel manager he was able to influence the decisions of upper level managers to allocate resources for this project. His role in this adoption of innovation process was to match technological development, in this case, interactive computer technology, to the goals of the organization.

In addition to the presence of Rick Gaunt, changes in the organization culture were present in Travel Manitoba. Briefly, an organization's culture may highlight certain values, ". . . making it difficult for members to conceive of the ways of doing things. An organizations culture defines that which people perceive as possible" (Tichy and Devanna, 1990). Prior to the summer of 1988 the Department of Business Development and Tourism was responsible for Travel Manitoba. After the summer of 1988, Travel Manitoba became part of Industry, Trade and Tourism. The importance of technology to the Manitoba's economy is actively supported by this organization, thus providing the environment where innovative ideas regarding computer technology may more likely flourish.

F. Future Trends in Computer Applications

Seven questions were asked about future trends in computer usage. These questions dealt with issues such as cooperation between private and public agencies, increased user friendliness of the systems, networking among regions, the importance of computer systems in interpretation, increased accessibility to the public, whether computers will replace travel counsellors and will computers be found in all

VICs. The findings suggest that the respondents anticipate increased user friendly computers, furthermore the variance in the responses is the lowest of all the seven questions. The respondents indicated that there will be a moderate increase in cooperation between public and private agencies in the development of computer systems, and networking of systems will become more common. Computers will become more accessable to the public although there is only slight agreement that computers will be viewed as interpretative devices in VICs. The highest variance recorded among the questions was with regards to the present of computers in all visitor information centres. Strong disagreement was expressed with regarding question G 2 (4): Computers will replace travel counsellors. Table 5.2 illustrates the responses of the agencies.

G. Hardware Considerations in the Future

Of the twenty one respondents, only fourteen completed this section of the questionnaire. The respondents were asked to identify the computer hardware their agency might be using in visitor information centres in the future. The respondents were asked to circle 'Yes' or 'No' on a list of options. In addition, a space was available for the respondents to identify other options not listed. The respondents were asked to forecast their agency's future computer needs. A number of respondents simply stated that they did not know what they might be using in the future. The respondent representing

Table 5.2
Trends in Computer Use
in
Visitor Information Centres

Question	Innovators (4)	Majority (13)	Laggards (2)
There will be increased cooperation between public and private agencies in the development of computer systems.	2.25	2.62	3
Computer systems will become more user friendly.	1.5	1.69	2
Systems will became more networked between regions.	2	2.31	2
Computers will replace travel counsellors.	4.5	3.31	5
Computers will be viewed as interpretive devices in visitor information centres.	3	2.69	4
Computers will be more accessible to the public.	2.25	2.08	3
Computers will be found in all visitor information centres.	2.25	3.23	3

NOTE

The Likert scale used for this question assumed that a 1 indicate strong agreement, while a 5 denoted a strong disagreement.

All values are rounded to the nearest hundred.

Prince Edward Island Tourism and Parks wrote "Not Decided" beside the question. The questionnaire from Manitoba Parks had "Unknown" written on the side. The comment, "Since we have not researched computer use, it isn't possible to say what we may use" came from Capital City Tourism and Convention Centre. Some respondents placed question marks beside options presented. Such was the case with the respondent representing Vancouver Tourism and Alberta Tourism. In the case of Saskatchewan, respondents circled one or two options and left the remaining options blank. The results of this section is found in Table 5.3.

Lack of knowledge regarding computer trends and future computer needs of the agencies could partially explain the relatively low response rate for this section. Although the majority of the respondents were aware of the existence of these computer systems, they expressed concern regarding the capabilities of these systems (See 'Awareness/Information Exchange'). The Hickling report (1988, p 32) suggested that "many users do not make use of the enhanced capabilities available on the system and tend to focus on the automation of functions previously performed manually". It was noted that questionnaires was sent to the directors of visitor services. The responsibly of this system and its developments may be determined by other individuals, therefore the directors of visitor services would not necessarily be aware of the type of computer hardware their agency could be using in the future in VICs.

Neither Travel Manitoba nor the Department of Tourism and Culture, Nova Scotia completed this section of the questionnaire. Although Travel Manitoba is planning to continue and expand the ELVIS/EARS system, long term funding may prove to be critical to the success of this project. Not surprisingly, the decisions made regarding computer technology will affect future developments. The agency is therefore 'locked into' a system due to the costs of the system in terms of organizational resources (Tichy and Devanna, 1990). These organizational resources include changes in operational procedures, staff training, and the capital costs of the

Table 5.3
Future Use of Computer Hardware

FUTURE HARDWARE (n = 14)	Number of Positive Responses	Percentage of Total
IBM PC Compatible Computers	12	85.7
Apple Computer	4	28.5
Laptop Computers	4	28.5
Local Area Computer Networks	6	42.8
Mini Computers	3	21.4
Mainframe Computers	5	35.7
CD ROM	3	21.4
Videodisc	7	50.0
Videotext	10	71.4
Touch Screen	11	78.6
Voice Synthesize Output	3	21.4
FAX	7	50.0

system. The nature and cost of the system implemented by Travel Manitoba influences future technological additions. Without long term funding of this project, future developments will be jeopardized.

In the case of Nova Scotia, the future use of computer hardware is not determined by the Director of Visitor Services, but rather by the management of Check Inns. As a private firm, Check Inns, is primarily motivated by profit. The imperative for future computer upgrades depends on issues including speed, and efficiency, which in turn influence the profitability of the system.

Eighty six percent of the respondents that answered this section, identified IBM PC compatible computer as future considerations (question G3). This is comparable to the percentage of the agencies which are currently using IBM PC compatible computers in VICs (question C5). Videodisc, videotext, and touch screen inputting devices are options that agencies could implement in the future. Only three agencies (21.4%) view CD ROM technology as a potential option for future use. Table 5.4 compares present use of computer hardware to that of potential use.

From these findings, it might be suggested that current use of option influences that use of the option in the future. For example, if an agency is using an IBM compatible computer system in the present, they are more likely to upgrade to a similar system in the future. This is consistent to what Tichy and Devanna (1990) refer to as 'Sunk Cost'. That is, organizations are often unable to enact change because of the allocation of the organization's resources in the old way of doing things (Tichy and Devanna, 1990, p. 75).

Table 5.4
Hardware Options Comparison
(Current and Potential Use in Visitor Information Centres)

Hardware Options	Current Use (n=5) Percentage	Potential Use (n=14) Percentage
IBM PC Compatible Compatible Computers	100	85.7
Apple Computers	0	28.5
Laptop Computers	20	28.5
Local Area Network Computers	20	42.8
Mini Computers	0	21.4
Mainframe Computers	40	35.7
CD ROM	0	21.4
Videodisk	20	50
Videotext	20	71.4
Touch Screen	20	78.6
Voice Synthesize Output	20	21.4
FAX	0	50

H. Summary

The factors affecting organizational innovativeness and the adoption of innovation have been discussed in this chapter. A summary of the findings is presented in Table 5.5

TABLE5.5 SUMMARY OF FINDINGS

	INNOVATIVE CATEGORIES		
FACTORS	Laggards	Majority	Innovators
Revenue	NSD	NSD	NSD
Funding Agency	NSD	NSD	NSD
Funding Division	NSD	NSD	NSD
Funding VIC	NSD	NSD	NSD
Total # of Employees	NSD	NSD	NSD
# of VIC Employees	NSD	NSD	NSD
# of VICs	NSD	NSD	NSD
# of Visitors Using VICs			***
Functional Differentiation	NSD	NSD	NSD
Administrative Intensity	NSD	NSD	NSD
Cost, Capital	B	B	B
Cost, Operational	B	B	B
Relative Advantage	N	N	A
Trialability, Evaluation	B	B	B
Trialability, Information	N	N	N
Compatibility	N	N	N
Complexity, Staff	?	N	N
Complexity, System	N	N	N
Awareness	B	B	A
Uncertainty, Organization	B	B	B
Uncertainty, Technological	B	B	B
Product Champions	B	B	A

LEGEND

NSD - NO SIGNIFICANT DIFFERENCE
*** - SIGNIFICANT AT .05
B - BARRIER
A - ACCELERATOR
N - NEITHER BARRIER OR ACCELERATOR

Organizational factors such as revenue, funding, organizational size, administrative intensity, and functional differentiation were used to evaluate tourism agencies using the laggards, majority and innovators groupings. Due to large variances among these groups, the assumptions associated with ANOVA were compromised. Consequently, these findings should be viewed with caution. The factor size - numbers using VICs exhibited a significant difference between the innovators, and the laggards and majority. The second category used to examine the use of examine the use of computers in VICs was the attributes of technology. Capital and operational cost were found to pose the greatest barriers to computer use to all groups. The third category, human factors probed the computer/human interface debate and global, organizational and technical uncertainty facing agencies which operate VICs. The presence of a product champion (as in the case of the innovator - Travel Manitoba) appears to promote the implementation of computers in VICs. A discussion of the future trends in computer applications and developments concluded this chapter. Inertia or what Tichy and Devanna (1990) refer to as 'sunk costs' influences the types of computers used by an organization. That is to say, what is in present use affects future considerations. The following chapter will examine additional factors which could affect the use and nature of computers in VICs in the future.

VI. Additional Concerns and Issues

During the analysis of the questionnaire it became evident that a number of other factors not specifically addressed in the survey likely influenced the use of computers in VICs. Supplementary information was therefore obtained through secondary sources including annual reports and promotional information, newspaper articles and personal communication. The examination of the secondary sources suggested that the following factors probably impacted on the adoption of computers in VICs. The interaction between private interests and public issues, the interrelationship between parks and tourism agencies, the advancement in computer technology, and the role of national tourism agencies will be discussed in this chapter.

A. Private Interests versus Public Concerns

Private interests and public concerns will be examined on two dimensions. The first situation involves the operation of VICs while the second pertains to the development of computer systems used by visitor services. Although this study did not directly examine the relationship between the public and private sectors of the tourism industry, this relationship appears to influence how and why computers are used in VICs.

The typical goals of government tourism operations are:

> . . . to harmonize to the maximum extent possible all government activities supporting tourism and recreation; to support the needs of the general public, the public and private sectors of industries involved with tourism and recreation to take a leadership role with all those concerned with tourism, recreation and national heritage conservation (Mill and Morrison, 1985, p.262).

The relationship between the public and private sectors will vary depending upon many factors, including the political philosophy of the government in power, and the relative importance of an industry to the country, or province. For example, the Progressive Conservative Party supports a free enterprise platform where the role of government is to support the efforts of private industry. The extent to which any government agency is involved in the tourism industry varies and is related to the mandate of the agency. In the case of Manitoba, the public sector is chiefly responsible for the design, content, and operations of the computer system used in VICs. On the other hand, the private firm of Check Inns is chiefly responsible for all the considerations associated with the development and operations of the computer system used in Nova Scotia. In both cases, VICs remained the responsibility of the provincial government. This situation contrasts with the circumstances in British Columbia.

In the fiscal year 1986-1987, the Government of British Columbia initiated the process of selling visitor information centres to the communities in which they were operated.

> The British Columbia Ministry of Tourism does not directly operate tourism information centres. There are approximately 145 'Travel Infocentres' in the province, which are community owned and operated. Each uses our corporate identity. (Dennison, Pers. Comm., 1990).

These Travel Infocentres have access to the Ministry's tourism database. The decision to use computer technology is made by the tourism associations responsible for the operations of the Infocentre. The Tourism Development Division of the Ministry assists these independent operators by providing counselling services and training. The Ministry is also concerned with quality control.

> The program's aim is to increase the standard of visitor service by improving the professional skills of infocentre operations. Network counsellors monitor infocentre operations, train managers/supervisors and advise on available business opportunities (British Columbia Ministry of Tourism, Recreation and Culture, 1988 p. 23).

Although Alberta Tourism has undergone a period of growth between 1987 to 1990, this agency is evaluating its role relative to the private sector. This involves the assessment of the role of visitor services and VICs.

> We (Alberta Tourism) must decided what our role is. Are we going to do everything poorly, or a few things well. We must decide soon so that future plans can be made regarding a number of things, one being computer systems. (Colin Sparrow-Clarke, 1989 Pers. Comm.)

Alberta Tourism appears to be following the British Columbia example of increased community involvement in the operation of VICs. A consultancy team was hired in September of 1990 to develop an educational program to be used in VICs. This program will provide competency-based occupational standards for managers and counsellors of VICs, self-directed instructional materials, including a video, and a community guidebook for the planning and operations of visitor information/service centre. (The Edmonton Journal, Saturday, July 21, 1990, Page G 9, and Smith, 1990, Pers. Comm.)

Although steps are being taken to clearly define the role of government in the operations of VICs in Alberta, the relationship between public and private tourism agencies remains unclear. Reported in Edmonton Journal on Thursday, November 15, 1990, West Edmonton Mall terminated three promotion employees, stating "its time for government to do more to encourage tourism. . . . We're hoping for more involvement, and interest in a higher priority for promotion, from the different levels of government". This viewpoint of increasing government involvement in the tourism industry is not shared by everyone. Furthermore, it is difficult to clearly distinguish between tourism and business marketing. The article continues by providing the comments from business leaders. Don Eastcott, managing director of the Canadian Organization of Small Business, said: "If they want people to come to the mall that's not tourism, that's business promotion". Although Eastcott acknowledged that the mall is a major tourism draw he suggests that "West Edmonton Mall has been successful in tapping the government funding and it's time for it to be weaned" (The Edmonton Journal Thursday, November 15, 1990, p. E10.)

Furthermore, the relationship between private and public tourism agencies may affect the type of information available to the visitor. That is, the information provided to visitors is determined by the membership of the organization operating VICs. For example, Tourism Vancouver receives funding through membership fees. Organizations which are members of this agency are actively promoted by this agency, while non-members do not share this privilege. Printed material, videos and new releases produced by Tourism Vancouver promote its membership, therefore the media image of Vancouver is defined by its membership. VICs become marketing tools for Tourism Vancouver. The computer system developed by Tourism Vancouver primarily manages reservations. As the costs of the system are paid through membership fees, only members are presented on the system. Tourism Vancouver presents a situation where the system is defined by the needs of the private sector. Consequently, only a limited view of the tourism opportunities is presented.

The relationship between the public and private sector will affect the operations of VICs and the development of computer systems used in VICs. Both sectors are concerned with the development and promotion of tourism within their respective jurisdiction. Cooperation and coordination are necessary to effectively promote an area without the duplication of duties or the exclusion of certain opportunities. Similar issues exist in the relationship between tourism and park agencies.

B. Tourism and Parks Independence and Interconnections

The goals and objectives of park agencies will affect joint ventures between tourism and parks. The relationship between tourism and parks agencies can be best described as tentative. Typically, the mandate of tourism agencies is to promote the area in order to generate financial gain, while park agencies promote conservation, preservation and outdoor recreation. The following is a portion of the 'Message from the Minister' (Don Sparrow) taken from Alberta Tourism 1989-1990 Annual Report (p.6).

> Over the past few years, the tourism industry has taken on a new direction. It is now the third largest employment and revenue generating industry in Alberta. As a key component of the diversification strategy of Alberta, tourism is expected to make large contributions to regional growth. . . . We face the challenges of competing in a highly sophisticated global marketplace. Alberta Tourism is now directing its efforts toward offering Albertans the competitive edge.

Economic diversification and regional development are key elements in the overall tourism development strategy of Alberta Tourism. These objectives may be contrasted with the principles stated in the Provincial Parks Act (1980):

> Provincial Parks shall be developed and maintained: (a) for the conservation and management of flora and fauna (b) for the preservation of specific areas and objects therein that are ecological, cultural, ecological, or other scientific interest; and (c) to facilitate their use and enjoyment for outdoor recreation. (RSA 1980 cP-22 s3,s4)

These contrasting directives has led a number of provinces to divide tourism and parks into separate ministries. One area that both tourism and parks agencies have in common is visitor services, yet once again differences arise as to the thrust of the services. Visitor information centres operated by tourism agencies tend to be affiliated with marketing, while park agencies are associated with interpretation (visitor services). The importance of visitor information centres as a marketing tool is conveyed by the following comment:

> Travel Manitoba's main objective is to increase the number of travellers and the amount of tourism expenditures with Manitoba in order to improve the Province's share of domestic and foreign travel markets. A further objective is to support tourism sales by providing consumer information through free literature and services at Travel Information Centres (Travel Manitoba: Marketing Plan, 1990, p.9)

In contrast, the federal parks policy stresses the importance of public understanding of heritage resources. Visitor information centres operated by Visitor Services sections within the Canadian Parks Service provide interpretative programs.

> There are three elements in Parks Canada's information and interpretation activities. Parks Canada will inform the general public of its programs, activities, policies, plans and management practices. It will also undertake interpretation programs within parks and through extension programs to illustrate the meaning and value of heritage resources. Thirdly, Parks Canada will provide information to make visitors aware of opportunities for the enjoyment of heritage resources (Parks Canada 1979, p. 18).

Although tourism and parks agencies may differ in the reasons they operate VICs, similar information needs are shared by these agencies. Within the completed questionnaires, there was no evidence of information links as related to information databases between tourism and parks agencies. The greatest potential for information linkage between tourism and parks agencies was found in Manitoba. Travel Manitoba's Electronic Laser Videodisc Information Service, ELVIS, enables a visitor to Manitoba to view short vignettes and individual video images of provincial parks and attractions, combined with textual and graphical information (Travel Manitoba Information Sheet, 1990). Other departments are eligible to use this interactive system, yet Manitoba Parks have, as of yet, failed to take advantage of this network. Presently, computers are not used at park gates or campground offices but, ". . .are used in district park offices. These are not presently used for visitor service information. They basically perform administrative functions." (Goldie, Pers. Comm. 1990). The interactive system developed and implemented by Travel Manitoba has only recently progressed from the status of a 'pilot project' to an established tool in operations of tourism information services. Additional modules and outlets equipped with this interactive system are presently being developed. Manitoba Parks is " currently considering a visitor information program for our reception area" (Goldie, 1990 Pers. Comm., 1990). The reluctance of Manitoba Parks to use the interactive system developed by Travel Manitoba may be related to the adoption of innovation rather than the problems associated with interagency linkage. That is, the adoption of ELVIS may occur in the near future but as this project examined the early stage of the adoption of computers in VICs, future joint projects between tourism and parks are unknown.

Developments in technology will also present new opportunities that are presently unavailable to systems managers. Developments in GIS, Local Area Networks (LAN), and Multimedia Personal Computers present new opportunities to expand the use of computers in VICs.

C. Geographic Information Systems

Geographic Information Systems (GIS) includes hardware and software that is used to produce, organize, combine, predict and analyze spatial information. GIS has been used for natural resource management, crisis management, marketing analysis, urban planning. The following examples are cited in the GIS Curriculum Development Toolkit, (Rogerson, 1990). GIS has been used to manage natural resources such as monitoring prairie crops, livestock and soil conditions in Southern Alberta. A GIS was used to manage the Exxon Valdez spill. The spatial dispersal of the spill on habitat considering factors such as wind and current direction was modelled using a GIS. Marketing analysis has been performed using this tool. Using census tract information, market analysts can determine the location of specific target markets in relation to the retail outlets. Urban planners use GIS to determine potential garbage disposal sites. Geological formations, soil composition, depth of ground water, wind direction, road access, proximity of populated settlements and site capacity are evaluated in such decisions.

Canadian Parks Service Western Region is presently implementing GIS to assist in planning and management of park resources (Ellehoj, Pers. Comm., 1991). This tool may eventually be utilized in VICs operated by parks and tourism. Although from a practical view (cost, staff skills) GIS may not be used in VICs in the near future, this technology can be used by tourism and parks agencies to manage information which directly effects the operations of visitor services. From an agency perspective, visitor profile information could be modelled to provide spatial information regarding potential target markets. Visitors could determine potential accommodation opportunities within a particular area at a certain cost using GIS technology.

D. Interconnected Local Area Networks (LAN)

A local area network or LAN is a group of desktop computers and other systems, located reasonably close to one another, connected in ways that allow their users to communicate and share computing resources such as printers and storage devices (Dortch, 1990). From a technical standpoint, a LAN is a network of computers connected by specific types of transmission media (such as cables) and network adapters and overseen by any one of a number of network cooperating systems that supports all necessary communication protocols and standards (Dortch, 1990).

The barrier that was most commonly cited to the use of computers in visitor information centres was cost. Network computers provide an opportunity to take advantage of computer technology while minimizing cost previous associated with computerization.

> Networking, whether it's local - or wide area, has become critical to business. More important, business networks can no longer exists as islands of connectivity. Now, if a business is to use its personal computers in ways that make sense, from a cost standpoint and help the business competitively, communication throughout the business in necessary (Rash, 1991, p. 107).

The Department Office Technology System (DOTS) developed by Environment Canada and used by the Canadian Parks Service is an example of a wide area network. As with other industries, people in the tourism industry need access to resources at other locations. Provincial tourism agencies may use similar network technology to linked visitor information centres in the future. Future developments in the Check Inns system involves the use of networked computer resources. One barrier that prevents the use of network technology is associated with interconnectivity.

Issues of interconnectivity have been the topic of debate in recent computer periodicals (Byte March 1991, and LAN Technology April 1991). As networks are linked, problems arise due to mixing topologies, protocols and operating environments. The topology of a network is the way in which the devices on the network are physically interconnected. A protocol is a set of rules for communication that includes a pattern or format for data and a procedure for its transfer. Operating systems provide a range of services and perform various tasks, such as accessing applications, files, printers, copying moving and deleting files, and formatting disks for information storage. MS-DOS, OS/2, Macintosh OS and Unix are examples of operating systems.

In the mid 1980's a LAN typically spanned a single office or workgroup, a few floors in a building or a few building in a campus-like setting. Compatibility among operating system, protocols and topologies did not pose significant problems as the system was designed for a set purpose. As LANs grew, computing requirements changes or attempts to link LANs together, problems associated with compatibility became more serious. However, Industry standards are now emerging which will permit the sharing of all computer resources by all network users, regardless of the source or location of those resources, and the upgrading and growth of the network.

E. Multimedia Technology

Considered by some in the computer industry as " the next evolution of computing" (Keller, 1991), multimedia provides personal computer users with new opportunities. In simple terms, multimedia permits the computer user to access a number of technologies for a variety of purposes. Sound and animation can be joined to a operation platform, such as Windows. Twelve organizations interested in the development of this technology have joined together to form the Multimedia PC (MPC) Marketing Council to develop standards for this technology. The minimum requirements to operate Multimedia applications are the following: a 80286 processor, 1 megabyte of RAM, Windows 3.0, sound capability and CD ROM. Other developers of multimedia technology suggest that super VGA and a 80386 processor are necessary to operate these applications. Multimedia is primarily used for three purposes: 1) Education, 2) Productivity/Presentations, and 3) Entertainment. Areas where these technologies are currently being used include training manuals and instructions, encyclopedias, marketing presentations, and corporate communication (combined with LAN multimedia enables the fast dissemination of information to employees) (Canning, 1991). As various mediums can be assimilated into one presentation, multimedia can enable visitor services to provide tourism information in innovative ways. Individual needs of the visitor can be readily handled by this technology. Cal Info is a multimedia system implemented by the State of California in the Fall of 1991. This system enable users to gain information about state run agencies, renew state licences (including motor vehicle licenses), and obtain visitor information (Computer Chronicles November 9, 1991). Using the familiar banking machine model and touch screen technology, this system utilizes print, sound, animation in the multimedia format. Similar systems may be introduced in Canada in the near future. The system used by Travel Manitoba presently meets the minimum standards needed by Multimedia extensions. Sound and animation may be future additions to this system.

F. National Tourism Agencies: Tourism Canada

Although Canada Tourism does not operate visitor information centres as defined by this study and therefore was excluded from the formal analysis, this organization does play a decisive role in the promotion of the Canadian tourism product. A National Tourism Organization (NTO) is the official body responsible for the development and marketing of tourism. Basically, the two major roles of NTO activities are (a) tourist information and (b) tourism promotion (Taylor, 1987). The NTO is responsible for the dissemination of information concerning the country. This may include the generation of general and specialized brochures about the country. In addition, NTO provides information to authors, journalist, and producers of tourist programs on radio and television. The NTO is commonly represented at tourism fairs or exhibitions, and special events. As NTO operate offices abroad, these offices commonly monitor the developments in the market in order to devise marketing strategies for the forthcoming season or year. For example, Tourism Canada has devised a computer program that will provide the user with a brief description of 150 events and attractions in Canada (CBC Calgary Eyeopener, May 6, 1991).

Tourism Canada is increasingly involved in the dissemination of tourism information. Tourism Reference and Data Centre (TRDC) maintains a comprehensive computerized collection of tourism-related information in Canada. Information is classified into eight major sectors:

transportation, accommodation, conventions, hospitality services, events and attractions, recreation activities and facilities, education, and tourism related enterprises. Information involving computer technology as related to the tourism industry can also be found the TRDC. Federal involvement in the provision of information related to computer technology was cited in the Hickling report (1988). The authors of that report suggest that Tourism Canada should provide information to tourism organization regarding computer technology. The report continues by describing a 'Technology Diffusion Registry' where interested parties could obtain information on technology and "who is purchasing what system with which features" (Hickling, 1988, p. 37). This registry would enable potential adopters to gain valuable technical and cost information inexpensively. At present the TRDC has not developed this registry.

G. Summary

The factors that influence the use of computers in VICs are complex. The relationship between public and private agencies affects not only the role of VICs but it affects the type of information available on these computer systems. The mandates of tourism and park agencies differ considerably, yet both are concerned with the operation of VICs. Park agencies stress the importance of preservation of resource and recreational opportunities, while tourism agencies commonly stress the economic effects of tourism. This relationship is tentative but as the agencies share similar certain objective resources may be also shared. Advancements in tools used by park agencies used for resource management, such as GIS, may eventually be incorporated in VICS. This technology potentially provides additional methods of meeting the needs of both the agency and visitor. LAN technology joins people and resources together whereby permitting agencies to share information. Multimedia technology offers new and innovative ways of disseminating tourism information. Finally, information technology used by Tourism Canada may permit agencies to access information necessary to develop computer system used by visitor services.

The intent of this chapter was not to provide a comprehensive list of the factors which influence of adoption of computers in VICs. Rather, this chapter has provided a preliminary examination of some of the major issues affecting visitor services and computer technology in the future. The following chapter summarizes the research findings with respect to the subproblems outlined in Chapter One and discusses implications and recommendations of this study.

VII. DISCUSSION AND IMPLICATIONS

A. Introduction

The purpose of this study was to examine the use of computers in government operated VICs across Canada. Before discussing the findings of this study, a number of introductory comments related to the problems inherent in this project are in order.

1) Of the forty eight questionnaires sent to agencies which operate VICs across Canada, only twenty eight questionnaires were returned. Although at least one questionnaire was returned from each of the provinces and territories surveyed, the intent of the study to provide an overview of the Canadian experience with computers in VICs could not be fulfilled due to the failure of some agencies to respond to the survey. For example, Ontario Ministry of Tourism and Recreation failed to respond even after repeated attempts to contact this agency. Tourism Quebec also failed to return the questionnaire.

2) The information gathered from the pre-test questionnaire suggested that agencies were using computers in VICs to a greater extent than was subsequently found from the data collected by the final questionnaire. This proved to be problematic as the questionnaire was designed on the assumption that more agenices were in the implementation stage of the adoption of innovation continuum. The results indicate that the vast majority of the responding agencies are at

various phases of the initiation stage of the adoption continuum. Consequently, this study examines the early stage of development and growth of computer use in visitor information centres.

B. Review of Subproblems

Regardless of these limitations information was gathered which provides a selected portrait of the use of computers in VICs in 1990. This section will list each proposition and summarize the relevant results.

First Subproblem. To determine the hardware and software applications employed for general use by agencies which operate visitor information centres.

Computers were used by 86.4 percent of the agencies responding to this questionnaire. After accounting for the discrepancies between the questionnaire and secondary materials, this figure increases of 90.9 percent. Mainframe computers were the most popular type of hardware used by 63.2 percent of the agencies. Micro computer closely followed at 57.9 percent These findings differ from those discussed by Sheldon (1987). This study revealed that micro computers were the most commonly used computer followed by mainframes. Sheldon's study discussed the possible development of computer networking. Forty two percent of the agencies responding to this survey were involved in networking personal computers. All of the responding agencies were using word processing programs for general office use. Accounting, database management, graphics, and spreadsheet programs were also popular.

Second Subproblem. To describe the computer systems used in visitor information centres. This description will include hardware and software considerations, funding, access, and advantages and disadvantages of the system.

Hardware

IBM PC compatible computers are primarily used in VICs. Networked computer systems were developed by CPS, Tourism Vancouver, Nova Scotia's Check-Inns. Travel Manitoba has developed the Electronic Laser Videodisc Information Service (ELVIS) which is an interactive video system.

Software

All agencies which are using computers in VICs have used commercial products to develop their systems. With the exception of Nova Scotia, the agencies operating VICs were responsible for updating the systems. In the case of Nova Scotia, the private firm Check Inns was responsible for the maintenance and updating of the system. Updating was done electronically or by print outs. Access to the computer system was generally limited to staff. Only Travel Manitoba accommodated visitor access to the system used in VICs.

Funding

Three forms of funding strategies were found. The first, where all costs associated with the system were paid directly by the agency, was used by CPS Western Region, and Prince Edward Island. Travel Manitoba developed its systems by means of accessing external funding sources. The third involves the cooperation of private and public resources. In the case Nova Scotia, a private firm Check Inns assumed responsibility of the computer system used in VICs. A fee paid to this organization for the use of this system by the public agency responsible for operating VICs. Finally, Tourism Vancouver is a private agency which obtains funding through room taxes and membership fees. Tourism Vancouver illustrates the case where private resources are essential to the funding strategy of a computer system used by VICs.

Advantages and Disadvantages

Advantages and disadvantages associated with the systems varied considerably. All agencies expressed concern regarding both the capital and operations costs of their systems. All agencies stated that these projects were worthwhile, although Prince Edward Island cited the greatest degree of dissatisfaction. Limited storage space, staff resistance to use, inflexibility, reliability and user friendliness were frequently cited as disadvantages of the systems in operation. Manitoba considered user friendliness and reliability to be advantages of its system. The reliability of the Check-Inn was regarded as an advantage by Nova Scotia. Tourism Vancouver concerned their system provided a high degree of flexibility, and user friendliness.

Uses of Computers in VICs

The mandate or role of the operating agency affects the development of the systems in VICs. Park agencies stressed issues of personal safety and leisure opportunities, such as fire hazards and hiking trails. Furthermore, development, implementation, and evaluation of interpretative programs by staff at VICs were concerns solely expressed by park agencies. Systems used by park agency tend to focus of interpretative and safety concerns. Tourism agencies emphasized the promotion of the area, including hospitality, accommodation, attractions, and events information. Reservation management was emphasized by tourism agencies.

Third Subproblem. To classify the agencies as to their innovativeness regarding the use of computer technology in visitor information centres.

The data used to determine the three classifications used to evaluate organization innovativeness primarily came from the returned questionnaires. The classifications used were 1) the laggards, 2) the majority, and 3) the innovators.

Three agencies were defined as the laggards as these agencies were not using computers. Newfoundland Tourism, Yukon Tourism and the Greater Montreal Convention and Tourism Bureau were classified in this group.

Fourteen agencies were grouped in the majority classification. The majority grouping consists of agencies which were using computers within the agencies, but not in VICs. This categories represents 86 percent of the respondents. The computer usage rate increased to 90 percent when the discrepancy between the survey and the secondary sources, regarding the Greater Montreal Convention and Tourism Bureau, was taken into account.

On the basis of the questionnaire, only five agencies responding to the survey were using computers in visitor information centres. These agencies were using computers within their organizations and in visitor information centres. These were: Nova Scotia Department of Tourism and Culture, Canadian Parks Service (Western Region, Visitor Services) , Prince Edward Island Tourism and Park (Development Division), Tourism Vancouver (Travel Infocentre), and Travel Manitoba (Customer Service).

Fourth Subproblem. To place selected agencies on the adoption of innovation continuum.

One assumption associated with innovation theory is that organizations must perform certain activities in order for an innovation to be adopted and used by the organization and user groups. At each stage of the innovation continuum particular actions or activities transpire. Due to limited information, selected agencies were used to demonstrate the activities involved in this process.

The adoption of innovation continuum consists of two stages. The initiation stage involves activities which lead up to the ultimate decision to utilize an innovation within an organization. This stage is composed of awareness, attitude formation, and decision making activities. Following the initiation stage is implementation. This stage involves adapting the innovation and procedures to match the needs of the organization. The implementation stage consists of adaptation, acceptance, and usage/incorporation stages.

The first level of the adoption of innovation continuum is awareness. This refers to the awareness of technology and how this technology can be used within the organization to meet its objectives. Tourism, Recreation and Heritage, New Brunswick characterized an organization in the awareness stage of the adoption of innovation continuum.

At the information gathering stage the agency actively seeks information regarding the innovation. This includes reassessing the direction and mandate of the agency, determining the options available in the marketplace, the costs and benefits associated with each option, understanding technological trends and how these trends may influence the operations of the organization and how these options can be used by the agency. An agency which is currently involved in this stage of the adoption of innovation continuum is Tourism Alberta.

The decision making stage of the continuum involves the evaluation of the information gathered in the previous stage with respect to the goals of the organization. In doing so, a decision is eventually made regarding the implementation of the innovation. From the data collected, Edmonton Tourism illustrates the characteristics of an agency which has entered the decision making stage of the adoption of innovation continuum. Edmonton Tourism represents an agency which has recognized the potential benefits of computerization, has gathered information regarding computerization, and has decided to use computers in VICs, but where due to organizational priorities computers in VICs have not been implemented to-date.

Only two agencies were used to examine the implementation phase of the adoption of innovation continuum due to the availability of information. Travel Manitoba and the Department of Tourism and Culture, Nova Scotia illustrate two very different approaches to the implementation process.

Both Manitoba and Nova Scotia have developed staff training programs and have adapted the system to meet the needs of the end users. While Manitoba had partially dealt with the issues involved in the Acceptance and Usage/Incorporate stages, Nova Scotia has worked through all of these aspects. In the case of Travel Manitoba, continuation and expansion of the computer system was in jeopardy due to unpredictable long term funding of the project. Furthermore, the system was not fully incorporated into the delivery system used by visitor information services and was regarded as merely a luxury. The system used by the Department of Tourism and Culture, Nova Scotia has been upgraded and expanded, long term funding has been secured, and the system has been incorporated into the daily operation of this agency.

Although a more thorough understanding to the adoption of innovation continuum is necessary, there appears to be a relationship between organizational innovativeness and the adoption of innovation continuum. Prior knowledge of the types of activities and problems associated with adoption process enables managers to examine and evaluate these issues. Strategies can be developed to aid the adoption process. This knowledge will permit both managers and staff members to deal more effectively with the innovation.

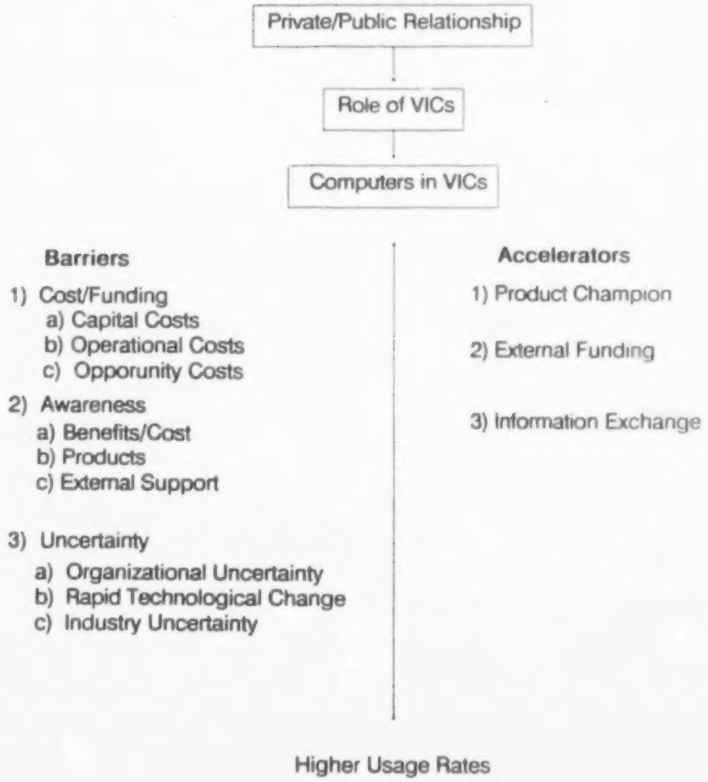
Fifth Subproblem. To determine the factors which affect the adoption of innovation process.

The Adoption of Innovation literature cites several factors which influence the adoption of innovation process (see Chapter 2). These factors include organizational, technical and human factors. Researchers including Leonard-Barton (1987, 1988) and Damanpour (1988) have identified the factors which affect each stage of the innovation continuum. Since this study is exploratory in nature, the specific factors which affect a particular stage of the adoption of innovation continuum were not identified. Therefore, the factors which affect organization innovativeness were identified in order to examine the factors which affect the adoption of innovation process. Organization innovativeness, as defined by this project, is the level to which an organization is using computer technology in VICs.

Figure 7.1 illustrates the findings of this project. The relationship between private tourism associations and public agencies varies among the jurisdictions examined. In British Columbia, VICs are operated and owned privately. In Nova

Figure 7.1

Relationships found in this Study


Private/Public Relationship
Role of VICs
Computers in VICs
Barriers
1) Cost/Funding
a) Capital Costs
b) Operational Costs
c) Opporunity Costs
2) Awareness
a) Benefits/Cost
b) Products
c) External Support
3) Uncertainty
a) Organizational Uncertainty
b) Rapid Technological Change
c) Industry Uncertainty
Accelerators
1) Product Champion
2) External Funding
3) Information Exchange
Higher Usage Rates

Scotia, VICs are operated publicly, while a private firm operates the computer system use in the VICs. In Manitoba, Travel Manitoba operates VICs and has developed and implemented the computer systems used in VICs. The role of VICs also varies. Tourism agencies which operate VICs tend to stress the importance of promoting an area to generate economic output. Parks agencies tend to use VICs as a centre to facilitate interpretation of an area for the visitor. These factors influence the computering requirements of the organization. For example, tourism agencies concerned with the economic consequences of tourism have developed computer systems which assist in the reservation management, while interpretation and safety are the key concerns expressed by parks agencies.

Costs and Funding

Capital and operational costs of computer systems in VICs were the most commonly cited barrier to the use of computers in VICs by all three innovative categories, the laggards, majority or innovators. The introduction of computer systems will alter the operating procedures of agencies. These systems must compete with established operating procedures. The cost of current operating procedures make additional cost, in this case the cost of computer technology, too expensive. Circumstances often demand that new programs compete with older programs for limited resources. Organizational inertia and resistance to change also affect the utilization of new technology. New initiatives are frequently delayed or cut as a result.

Awareness

As computers in VICs are a relatively new phenomenon, the benefits and drawbacks associated with the implementation of computers in VICs are not clear. Awareness involves an understanding of the range and variety of systems and their respective capabilities. In this study, awareness issues were related to a manager's limited knowledge of advancements in computer technology. Information was required by tourism and park organizations to assess the capabilities of computer technology. This requires the organization to allocate resources to research the possibilities. Some organizations do not have sufficient resources to conduct needs assessment studies. The lack of reliable, current, and accurate information regarding computer systems is the second most commonly stated factor as a barrier to the use of computers in VICs.

While the majority and the innovator categories have both implemented computers systems within their organization, the laggards have not had this opportunity. Both the majority and the innovators indicated that staff computer skills were limited. The laggards indicated that staff computer skills were adequate, possibly suggesting that laggards were not aware of the skills involved in the development and implementation of computer systems. All three groups concurred that they had limited opportunities to evaluate computer systems operated by other agencies.

Uncertainty

All three groups are affected by uncertainty be it organizational, technological or global uncertainty. Government agencies have had to streamline their operations in order to fulfil their mandates in times of fiscal constraint. Both human and physical resources have been reduced. Funding for new programs, including computers in VICs, is limited.

Beyond organizational uncertainty, rapid technological change contribute to additional scepticism. Technological developments are introduced to the market swiftly. A product can be introduced on the market as 'state of the art' technology and within a six month period become virtually obsolete (Moore, 1991). With such rapid change, long term technological planning is very difficult. Therefore, managers must make decision involving computer technology which will have long term consequences in an ever changing environment.

Finally, energy costs, environmental disasters, airline deregulation, terrorism, and war have had an affect on world tourism and consequently tourism marketing strategies.

Product Champion

The role of product champions was seen to accelerate the adoption process. Kanter (1983) and Leonard-Barton (1988) discussed the role of a product champion in the implementation innovation. The example was provided of Rick Gaunt in the case of Travel Manitoba. An innovation requires the sponsorship of someone in the organization who has the political influence and access to the necessary resources. This individual acts as an enthusiastic salesperson for the idea. Furthermore, this individual is involved at all stages of the innovation continuum, that is initiation through to the implementation phase. Gaunt was involved in all stages of the systems developed and implemented by Travel Manitoba.

External Funding

As recessionary times require both public and private agencies to become 'leaner and meaner' new projects must compete with established projects for funding. External funding provides a means of maintaining established programs while developing innovative pilot projects. For example, the capital cost of the system developed by Travel Manitoba was funded under the Canada-Manitoba Tourism Development Agreement, (1985-1990). Although external funding may cover some of the costs associated with the project, long term funding must be found to ensure the continuation of the project. In the Travel Manitoba case, the end of the 1985-1990 Canada-Manitoba Tourism Development Agreement jeopardizes continuation and expansion of the Travel Manitoba information system.

Information Exchange

Inadequate information regarding the technological and pragmatic concerns of the implementation of computer systems in VICs was expressed as a barrier. Conversely, an appreciation of the issues involved, including technical and social, accelerates the adoption process. As suggested by the Hickling Report (1988) such information should be available in a central information registry where tourism and park agencies can access this data.

Computers in VICs

Although variables including revenue, funding, size, administrative intensity, functional differentiation have been linked to the adoption of innovation in other studies (Kimberly, 1987, Leonard-Barton, 1988), they did not appear to be linked to the use of computers in VICs. There appears to be a significant difference between the innovators and both the laggards and the majority with regards to the number of visitors using VICs. There are more visitors using the VICs which use computers than those that are not using computers. However, results of this aspect of the study should be treated with caution due to the large variance within the variables categories and the small sample size. Furthermore, this increase in usage of VICs may be explained by other related factors. Visitor inquiries may be more effectively and accurately recorded using computers than when done manually.

The agencies using computers in VICs may place more effort in marketing the VICs. That is, the use of computer technology is prominently discussed in promotional materials, such as in the case of Travel Manitoba. In this situation, VICs are not only places which provide tourism information, but rather tourism attractions in and of themselves.

Sixth Subproblem. To identify future trends in computer use in visitor information centres.

Eighty six percent of the respondents that answered this section of the questionnaire, identified IBM PC compatible computers as future considerations. This is comparable to the percentage of the agencies which are currently using IBM PC compatible computers in VICs. Videodisc, videotext, and touch screen inputting devices are options that agencies could implement in the future. Only three agencies of the responding agencies (21.4%) view CD ROM technology as a potential option for future use. GIS and multimedia technology was also discussed as potential innovations for use in VICs in the future.

C. Theoretical Implications and Recommendations

A number of implications and recommendations for future research have arisen for this study. They are as follows:

1) Although the pre-test responses indicated that the adoption innovation process had progressed further than was subsequently revealed by the study, the results demonstrated

that the vast majority of the respondents are in various states of the initiation stage of the adoption continuum. Therefore, this study examined the use of computers in VIC early in the adoption process whereby providing a basis for future study.

2) As an exploratory study, issues were uncovered which affect the development and implementation of computer systems. These issues associated with the advent of computer system were also identified by other research. In the spring of 1990, Simon Fraser University hosted a conference which examined the interconnections among tourism, environment and technology. Technological transfer received considerable attention at this conference. Barriers to the diffusion of technologies were identified. The following is a list of these barriers:

- limited awareness and understanding of what the technologies are and how they can be used;
- an inability and lack of opportunity among current tourism resource managers to evaluate existing technological systems;
- relative complexities of these technologies and their incompatibility with current labour intensive practices;

relatively high purchase, installation, and maintenance cost (Williams, 1990).

These barriers are similar to those found in this study. The need for information exchange is evident in both studies. This need was also identified in the Hickling Report (1988) commissioned by Tourism Canada. Agencies which are considering developing or upgrading computer system for use in VICs need access to accurate and current information to make informed decisions, including which computer components have been used by other agencies.

3) Innovative literature, specifically the use of innovation by organizations, was used to construct the theoretical foundation of this study. Very little has been published in the field of recreation and leisure which employs innovation literature, although Crompton and Lamb (1986) noted the relevance of innovation literature to park and recreation projects and facilities. Consequently, the literature review used for this study involved the application organizational studies to recreation and leisure. As the scope of this area of research is broad, and without the benefit of past experience of recreation and leisure research in this area, it was necessary to focus on a small area of innovation research. From the findings of this research, the adoption of innovation process may provide an interesting platform for further research in the field of recreation and leisure studies. Sherman and Havitz (1991) used the Rogers' model to examine a park and recreation district's successful introduction of an innovative recreation facility. From the Sherman and Havitz (1991) study and this research it can be concluded that awareness of the factors which affect the adoption process or the diffusion process provides recreational professions with information needed to successfully implement innovative programs. This information affects the development of programs, staff involved and finally end user satisfaction. These ultimately affect the success of an program or project.

4) Tourism is a highly competitive industry. Excellence in visitor services is a way of gaining the competitive advantage in the market. A number of services have been computerized, most notably airline reservations and scheduling, to increase efficiency and traveller satisfaction. Awareness of computer technology is necessary. Advances in areas including management information systems, LANS, geographic information systems, multimedia technology offer opportunities to expand and upgrade service provision in VICs. Managers must become aware of the trends in technology as it affects the operation of their agencies, in order to remain competitive in a highly competitive industry.

Beyond the issue of awareness, computer technology must be viewed as viable tools for recreation professionals. Advancement of the leisure profession involves the ability to utilize new technology. As both recreation and tourism involve spatial considerations, knowledge and experience with tools such as GIS, may be necessary skills in the workplace. Developments in technology equip professionals with additional tools which can improve resource allocation decisions, essential in times of economic constraint.

5) The adoption of innovation process provides a general understanding of the issues that affect the use of computer in VICs. These findings suggest that the adoption of innovation process does not follow a rigid format, rather the process is influenced by technical, organizational, and social factors. Computer technology has been adopted by a few agencies but the

vast majority of the respondents have not yet realized the potential of this technology. The examination of innovation provides only one context to examine the use of technology in tourism, in this case, computers in VICs. Other research approaches will provide additional insights in which to examine the process of innovation. Additional information regarding the impact of organizational cultural on innovation, and role of product champions (to name only two examples) are necessary to expand an understanding of the use of technology within tourism and park organizations.

6) Innovation studies have been used in the past to examined a variety of innovations, including crop selection and medical practices (Rogers, 1983). The diffusion of these innovations is relatively slow compared to the rapid diffusion of computer technology in the marketplace. Consider the speed with which products such as Windows 3.1 and OS2 2.0 have been adopted by computer users.

The final section of the questionnaire used in this study examined the future use of computers. The list of possibilities was outdated before the questionnaire arrived to the selected agencies. A contribution to the innovative studies literature has been made by applying the adoption of innovation continuum and organizational innovativeness to a rapidly developing innovation, such as computer technology.

Furthermore, this research was conducted during an economic recession. Economic uncertainty was found to be an important barrier in the adoption of innovation. The role of economic uncertainty in the adoption of an innovation by a public organization is a further contribution.

7) The funding of the computer systems used by the innovators involved three strategies: 1) Public only, 2) Shared public and private, and 3) Private only. The relationship between public and private agencies which operate VICs is poorly understood. Future research is needed to examine why one agency chooses to follow one strategy, while another agency pursues a different course. An examination of organizational culture offers a viable approach for such an investigation.

8) The year 1991 marks the tenth anniversary of the introduction of the personal computer by IBM. Since then the personal computer has changed both the way people work, and patterns of recreation and leisure. Various fields interested in tourism have examined the affects of computer technology on tourism. The impacts of computer technology on recreation and leisure studies have not been systematically investigated.

Adoption of innovation is only one approach to examine the use of computer technology in recreation and leisure. The manner in which an organization manages technology must also be evaluated. Organization culture must support the adoption of innovation. The values of the organization should be identified. These including the role of the recreational profession vis a vis the public, the mission of the agency, environmental concerns, and the importance of consumer choice. Organization culture also consists of understanding organizational structure and power relationships. This involves the centralization or decentralization of power, and the equality of divisions and functions of the organization. Furthermore, the understanding of the political policies involved in the allocation of scarce resources is essential to an understanding of the adoption of innovation by an organization.

Research involving the role of product sponsors in the organization structure could provide additional insight in the innovation process. Product sponsors must be able to mobilize commitment to new ideas and ways of doing things, and gain cooperation of key coalitions within the organization in order for adoption of innovation to proceed. For example, a possible extension of this research project could include a case study of Travel Manitoba. This study could investigate the role of Rick Gaunt as a product champion and the norms and values of this agency.

Both approaches, organization culture and product sponsors require creative research approaches in order to investigate the dynamic nature of technology and recreation. These issues and others deserve attention by researchers and professionals in the field in order understand recreation and leisure in the next decade.

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Appendix 1

Using the microcomputer program dBase Stats, an analysis of variance, (ANOVA) was performed to determine whether there was a significant difference among the laggards, the majority, and the innovators as to the organizational factors revenue, size, funding, functional differentiation and administrative intensity.

The assumptions of Anova, normality of data, randomness and equal variance among groups, were relaxed, therefore the results of Anova must be evaluated with caution. With this in mind, the analysis demonstrated that, with one exception, there was no significant difference among these groups with regards to the organizational factors. There appears to be a significant difference between the 'innovators' and both the 'laggards' and the 'majority' with regards to the number of visitors using visitor information centres. There are more visitors using the VICs which use computers than those that are not using computers. The results of Anova are found in Table A.1.

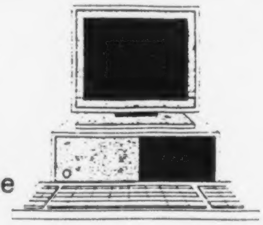
Table 5.1
Statistical Analysis
Organizational Factors

Factor	Mean of the Innovators	Mean of the Majority	Mean of the Laggards	F Score (p=.05) (Between the 3 groups)
Revenue	727,750,000	779,210,000	647,200,000	.9614
Budagency	15,340,000	18,111,429	5,350,000	.5043
Budsub	3,150,000	3,963,865	1,020,000	.6891
Budvic	452,750	409,488	172,333	.4921
Stafforg	47.8	45.7	29.3	.5918
Staffvic	47.8	18.7	28.0	.7141
Numbervic	84,666	157,815	84,666	.1248
Numbervis	6.6	6.3	6.6	.0028**
Admin Int	32.6	24.7	32.6	.5087
Funct Def	8.6	10.42	8.6	.5722

** Significant at p=.05

Appendix 2: Questionnaire Materials

Alberta
TOURISM
4th Floor, CityCentre, 10155 - 102 Street, Edmonton, Alberta, Canada T5J 4L6 403/427-2280 Telex 037-3651 Fax 403/427-2852



February 19, 1990

Attention: Visitor Service Director

The Department of Recreation and Leisure Studies at the University of Alberta in conjunction with Alberta Tourism is presently studying the use of computers in visitor information centres.

The purpose of this questionnaire is to identify patterns of computer usage in visitor information centres administered by Tourism and Parks agencies across Canada.

As the Director of Visitor Information, your contribution is necessary for for the success of this project. You are asked to complete the attached questionnaire and send it back in the envelope enclosed.

You may be assured of complete confidentiality. The questionnaire has a identification number for mailing purposes only. This number helps identify which questionnaires have been returned.

Thank you for your assistance.

Yours sincerely,

Barbara Redmond,
Research Coordinator

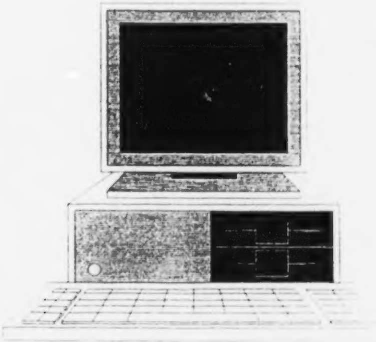
This research is supported by:

Colin Sparrow-Clarke
Director, Administration Division
Systems and Computing Services
Alberta Tourism

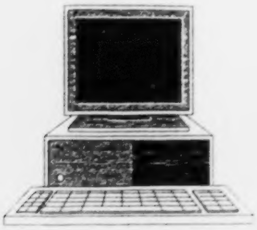
Guy Swinnerton, Ph.D
Professor and Chair
Department of Recreation and Leisure Studies
University of Alberta

Computers in Visitor Information Centres

RESEARCH PROJECT



This study is being undertaken to determine the nature and extent of computer usage in visitor information centres across Canada. Your cooperation and support of this project is greatly appreciated.



VISITOR INFORMATION CENTRES

For the purposes of this project, visitor information centres are defined as as places visitors/travellers physically enter to obtain tourism or travel information while on route to, or at their destination. This excludes pre-holiday planning or telephone communications.

Please Return before March 26, 1990 to :

Barbara Redmond
Computers in Visitor Information Centres
Research Project
#604 Galbraith House
Edmonton, Alberta
T6H-5B5

INSTRUCTIONS:

PLEASE CIRCLE OR WRITE IN THE APPROPRIATE RESPONSE TO EACH QUESTION.

A. BACKGROUND INFORMATION

A 1) What is the official title of the government group responsible for visitor information centres in your department? (Example: Visitor Services)

____

A 2) There are many titles used to describe "visitor information counsellors", who provide information services to visitors/travellers. What is the term your organization uses to describe the people who provides these services?

____

A 3a) How many visitor information outlets does your agency operate ________________

A 4a) How may visitor information counsellors are employed by your agency on a FULL TIME basis year round? ________________

b) employed on a PART TIME basis year round? ________________

A 5a) What are your peak periods throughout the year? (eg. May - September) ____________________

A 5b) How many visitor information counsellors are employed by your agency during peak periods on a FULL TIME basis? ____________________

b) employed on a PART TIME basis ____________________

A 6a) How many visitors used the visitor information services provided by your agency last year?

(Most recent visitor statistics) ____________________

A 7a) List the duties visitor information counsellors perform in visitor information centres.

B. GENERAL COMPUTER USE

This section deals with the general use of computer anywhere in your agency.

B 1) Is your agency currently using computers ?

YES. 1

NO . . . . . 2 (GO TO SECTION E)

B 2) What general types of computers are used by your agency?

STAND ALONE PERSONAL COMPUTERS. 1

NETWORKED PERSONAL COMPUTERS. 2

MINI COMPUTERS. 3

TERMINALS LINKED TO MAINFRAME 4

B 3) Please indicate all the areas your agency is using computers

WORDPROCESSING 1

ACCOUNTING 2

GRAPHICS 3

SPREADSHEETS 4

FAX. 5

ELECTRONIC MAIL. 6

DESK TOP PUBLISHING. . .7

DATABASE MANAGEMENT. . .8

OTHERS, PLEASE SPECIFY

____

C. PRESENT USE OF COMPUTERS IN VISITOR INFORMATION CENTRES

In this section you will be asked specific questions about the use of computers in visitor information centres.

C 1) Do you now use computers in your visitor information centres?

YES. 1

NO . . . . .2 (GO TO SECTION F)

C 2) What general types of computers are being used in your in visitor information centres?

STAND ALONE PERSONAL COMPUTERS. 1

NETWORKED PERSONAL COMPUTERS. 2

MINI COMPUTERS. 3

C 3) Does your agency use computer terminals linked to a mainframe system?

YES. . . . .1 (GO TO QUESTION C4)

NO . . . . .2 (GO TO QUESTION C5)

C 4) Is the mainframe system you are using owned by:

YOUR GOVERNMENT ORGANIZATION 1

A COMPUTER SERVICE BUREAU - YOU BUY MAINFRAME TIME . . 2

C 5) Indicate the computer hardware you are presently using in visitor information centres?

	(YES)	(NO)
IBM PC COMPATIBLE COMPUTERS	1	2
APPLE II COMPUTERS	1	2
APPLE MACINTOSH	1	2
COMMODORE AMIGA	1	2
ATARI ST	1	2
CD ROM	1	2
VIDEODISK	1	2
TOUCH SCREEN	1	2
LASER PRINTER	1	2
VOICE SYTHESIZER	1	2
FAX BOARD	1	2

C 5A) Are you using portable computers?

YES. 1

NO 2

If YES, please specify type(s).

C 6) The computer software packages you are presently using in your agency were designed by: (Circle all the numbers that apply)

MEMBERS OF YOUR TOURISM AGENCY 1

MEMBERS OF YOUR MUNICIPAL GOVERNMENT AGENCIES. 2

CONSULTANT OUTSIDE OF YOUR MUNICIPAL GOVERNMENT AGENCIES . . . 3

COMMERCIAL ORGANIZATIONS 4

C 7) What general types of software packages that are used for computer based information systems in your visitor information centres?

	YES	NO
DATABASE PROGRAMS	1	2
WORD-PROCESSING PROGRAMS	1	2
SPREADSHEET PROGRAMS	1	2
GRAPHICS	1	2
COMMUNICATION PACKAGES	1	2
DESK TOP PUBLISHING	1	2
INTEGRATED PACKAGES	1	2
OTHER SOFTWARE PACKAGES		

____

C 8) Can visitors directly access the computers in your visitor information centres?

YES. . . . . 1 (GO TO QUESTION C 11)

NO . . . . . 2 (GO TO QUESTION C 9)

C 9) Who has direct access to computers in your visitor information centres? (Circle all numbers that apply)

Managers of Visitor Information Centres. . . .1

Visitor Information Counsellors. 2

Other, please specify

____

C 10) How is computerized information distributed to the visitor.

Verbal Communication with Staff 1

Printed Output. 2

On-Screen Display 3

Other, please specify

____

C 11) Please indicate how computers are now used in your visitor information centres.

	(YES)	(NO)
COLLECT VISITOR STATISTICS	1	2
MANAGE RESERVATION SYSTEM	1	2
ON-SITE INTERPRETIVE PROGRAMS	1	2
OTHER, PLEASE SPECIFY		

____

C 12) Please indicate whether computers are used in the distribution of the following visitor information.

	(YES)	(NO)
ACCOMMODATION INFORMATION	1	2
ATTRACTION/EVENT INFORMATION	1	2
TRAVEL/TRANSPORTATION INFORMATION	1	2
INFORMATION ON LEISURE OPPORTUNITIES	1	2
OTHER, PLEASE SPECIFY		

____

C 13) What information do visitors most frequently request? Place a 1 beside the function most often requested by visitors; a 2 beside the next most used function by visitors. Continue until all functions have a number beside them. If necessary add other functions to this list. If function is not available mark NOT APPLICABLE (NA).

ACCOMMODATION INFORMATION ______________

ATTRACTION/EVENTS INFORMATION ______________

TRAVEL/TRANSPORTATION INFORMATION ______________

RESERVATION INFORMATION ______________

LEISURE OPPORTUNITIES INFORMATION ______________

ON-SITE INTERPRETIVE INFORMATION ______________

OTHERS

______________________________ ______________

______________________________ ______________

C 14) Who is responsible for the upkeep of the computer system used in visitor information centres? (Circle all numbers that apply)

MEMBERS OF YOUR TOURISM AGENCY. 1

MEMBERS OF YOUR MUNICIPAL GOVERNMENT AGENCIES 2

CONSULTANT OUTSIDE OF YOUR MUNICIPAL GOVERNMENT AGENCIES. . . 3

C 15) What type of information is stored in on-line databases? (Circle all numbers that apply)

VISITOR STATISTICS 1

RESERVATION INFORMATION. 2

ATTRACTION/EVENT INFORMATION 3

SITE INFORMATION 4

TRAVEL/TRANSPORTATION INFORMATION. 5

ACCOMMODATIONS INFORMATION 6

OTHER, PLEASE SPECIFY

____

C 16) Which department(s) are responsible for up-dating on line information? (Circle all numbers that apply)

TOURISM 1

RECREATION. 2

PARKS 3

ENVIRONMENT 4

OTHER, PLEASE SPECIFY

____

C 17) How is updated information communicated to you: (Circle all numbers that apply)

DISTRIBUTION OF DISKETTES. 1

ELECTRONIC MAIL. 2

FAX. 3

PRINTED MATERIAL 4

OTHER, PLEASE SPECIFY

C 18) Do other levels of government (federal, provincial, territorial or municipal) have direct access to this database?

YES 1

NO. 2

IF YES, please specify.

____

C 19) Do other groups within your organization have access to this database?

YES. 1

NO 2

If YES, please specify.

____

C 20) Generally, how satisfied are you with the system your agency is presently using? (Please circle the most appropriate response).

1	2	3	4	5
Very Satisfied	Somewhat Satisfied	Neutral	Somewhat Dissatisfied	Very Dissatisfied

C 21) How satisfied are you with specific aspects of this system. State how much you AGREE or DISAGREE with each of the following statements

	Strongly Agree				Strongly Disagree
Purchase cost of the system was reasonable.	1	2	3	4	5
Operational costs of the system were reasonable.	1	2	3	4	5
The system was reliable.	1	2	3	4	5
The system provide adequate storage space.	1	2	3	4	5
The system provided the flexibility we needed.	1	2	3	4	5
The system was user-friendly.	1	2	3	4	5
The staff enjoyed using the system.	1	2	3	4	5

C 22) After considering all aspects associated with the development and implementation of computers in visitor information centres, do you feel it was worth it?

YES 1

NO 2

D. FUNDING STRATEGIES

In this section, information will be sought regarding funding strategies for computerized visitor information systems.

D 1) Are the costs associated with this system shared between levels of governments?

Yes. 1

NO . . . . . .2 (Go to question D 2)

D 1a) Please indicate the levels of government involved in the funding of the system. (Circle all members that apply)

Federal 1

Provincial. 2

Territorial 3

Municipal 4

Other, please specify

____

D 1b) Briefly describe the funding agreement between these levels of government.

D 2) Within your organization who assumed the capital costs of this system? (Circle all numbers that apply)

TOURISM 1
RECREATION. 2
PARKS 3
ENVIRONMENT 4
OTHER, PLEASE SPECIFY

____

D 3) Within your organization who pays the operational costs of this project? (Circle all numbers that apply)

TOURISM 1
RECREATION. 2
PARKS 3
ENVIRONMENT 4
OTHER, PLEASE SPECIFY

____

D 4) Do private organizations contribute to the funding of computers in visitor information centres? (Circle number)

YES. . . . .1 (GO TO QUESTION D5)
NO . . . . .2 (GO TO SECTION E)

D 5) Describe how private agencies are involved in the funding of the computers used in your visitor information centres.

E. PAST EXPERIENCES WITH COMPUTERS IN VISITOR INFORMATION CENTRES

E 1) Has your organization used computer technology in visitor information centres which you are no longer presently using? (Circle number)

YES. . . . .1 (GO TO QUESTION E6)

NO. . . . .2 (GO TO QUESTION SECTION F)

E 2) What types of computers have you used in the past? (Circle all numbers that apply).

STAND ALONE PERSONAL COMPUTERS. 1

LOCAL AREA NETWORKED COMPUTERS 2

MINI COMPUTERS. 3

TERMINALS LINKED TO MAINFRAME 4

E 3) How were computers used in the past in visitor information centres?

E 4) Generally, how satisfied were you with the system your agency used? (Please circle the most appropriate response).

1	2	3	4	5
Very Satisfied	Somewhat Satisfied	Neutral	Somewhat Dissatisfied	Very Dissatisfied

E 5) How satisfied were you with specific aspects of this system. State how much you AGREE or DISAGREE with each of the following statements.

	Strongly Agree				Strongly Disagree
Purchase cost of the system was too high.	1	2	3	4	5
Operational costs of the system were too high.	1	2	3	4	5
The system was reliable.	1	2	3	4	5
Storage capacity of the system was adequate.	1	2	3	4	5
The system offered the flexibility we required.	1	2	3	4	5
The system was user friendly.	1	2	3	4	5
The staff enjoyed using the system.	1	2	3	4	5

E 6) Why are you no longer using this system? (Circle one number for each statement)

	YES	NO
Improved technology was available.	1	2
The cost of the system was too high.	1	2
The staff did not want to use this system.	1	2
The system did not fulfil the needs of your agency.	1	2
Role of agency changed therefore system is no longer required.	1	2
After considering all of the costs involved in the development and implementation of the computer system, it was NOT worth it.	1	2

Other, please specify

F. BARRIERS TO COMPUTERIZATION

In this section, the barriers to computerization will be examined

F 1) What do you perceive to be the barriers to computerization of visitor information centres in your agency. State how much you AGREE or DISAGREE with each of the following statements.

	Strongly Agree				Strongly Disagree
The purchase cost of a computer system is too high.	1	2	3	4	5
The operational cost of a computer system is too high.	1	2	3	4	5
Computer systems are too complex.	1	2	3	4	5
Our staff have limited computer skills.	1	2	3	4	5
It is difficult to obtain reliable information about computers.	1	2	3	4	5
Computer systems are incompatible with our current operating procedures.	1	2	3	4	5
There is limited opportunity to evaluate computer systems used by other agencies in visitor information centres.	1	2	3	4	5
Computerization is not necessary to complete our department mandate.	1	2	3	4	5

F 2) Please elaborate on these and additional barriers to the use of computers in visitor information centres

G. FUTURE TRENDS

This section will discuss future trends in the use of computers in visitor information centres.

G 1) From your perspective, which tasks would you like to see in computer system perform in visitor information centres in the future?

G 2) Within the next 5 years, what trends do you see occurring with regards to the use of computers in visitor information centres? State how much you AGREE or DISAGREE with each of the following statements.

	Strongly Agree				Strongly Disagree
There will be increased cooperation between private and public agencies in the development of computer systems.	1	2	3	4	5
Computer systems will become more user friendly.	1	2	3	4	5
Systems will became more networked between regions.	1	2	3	4	5
Computers will replace travel counsellors.	1	2	3	4	5
Computers will be viewed as vital interpretive devices in visitor information centres.	1	2	3	4	5
Computers will be more accessible to the public.	1	2	3	4	5
Computers will be found in all visitor information centres.	1	2	3	4	5

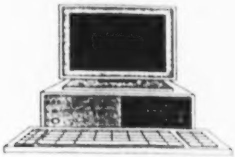
G 3) Please specify the computer hardware your agency could be using in the future in visitor information centres.

	YES	NO
IBM PC COMPATIBLE COMPUTERS	1	2
APPLE COMPUTERS	1	2
LAPTOP COMPUTERS	1	2
LOCAL AREA COMPUTERS NETWORKS	1	2
MINI COMPUTERS	1	2
MAINFRAME/CENTRALIZED COMPUTERS	1	2
CD ROM	1	2
VIDEODISK	1	2
VIDEOTEXT	1	2
TOUCH SCREEN	1	2
VOICE SYNTHESIZE OUTPUT	1	2
FAX	1	2

Others, please specify

G 4) Is there anything else you would like to say about the use of computers in visitor information centres? If so, please use this space for that purpose.

THANK YOU VERY MUCH FOR YOUR ASSISTANCE IN ANSWERING AND RETURNING THIS QUESTIONNAIRE. If you would like a summary of the results, write your name and address on the back of this questionnaire. I will make sure that you get a copy



February 26, 1990

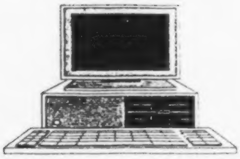
Last week a questionnaire was sent to you regarding the use of computers in visitor information centres administered by Tourism and Parks agencies across Canada.

If you have already completed and returned it to me please accept my sincere thanks. If not, please do so today. As the Director of Visitor information, your contribution is necessary if the results are to accurately represent patterns of computer usage in visitor information centres across Canada.

If by some chance you did not receive the questionnaire, or it got misplaced, please contact me at (403-434-1943) and I will get another one in the mail to you today.

Sincerely,

Barbara Redmond
Research Coordinator



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